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ESSAY ON "IMMUNITY."*

BY "ECRIVAIN."

(*Continued from page* 252.)

QUARTER-ILL.

THIS is a disease against which immunity is easily given by inoculating the virus taken directly from a diseased animal, without any attenuation, into the jugular vein, taking care that none of it reaches the connective tissue. The usual method of obtaining material for injection is to take the blackest part of the tumour of an animal just dead of the disease, cut into small pieces, triturate in a mortar with distilled water, and filter through several layers of muslin, previously wetted with water, and of this filtrate inject five to ten drops. Another way is to inoculate guinea-pigs, causing the formation of a tumour, and treating this in a similar manner. Others, again, use the desiccated virus obtained by drying the diseased tissues or black tumour.

PLEURO-PNEUMONIA CONTAGIOSA.

Immunity against this disease is of great importance and should be carried out on all healthy animals in contact with the diseased, and certainly should come before slaughter, although the latter has been the means of stamping it almost out of this country, but still at a great expense. It has not yet been fully determined how long the immunity lasts, but still, if it carries over the outbreak it would save the life of many a healthy animal. The virus is taken from the inter-lobular connective tissue of the lung in the first stage of a mild attack, when it will be loaded with a semi-fluid exudate. The fluid is collected, filtered, and put into sterilised tubes,

* Read before the Edinburgh Veterinary Medical Society.

which are afterwards sealed by the blow-pipe. The tip of the tail is the part selected, and scarification is quite sufficient on the under surface, one drop of the filtrate being quite enough for protection. Some make an incision and use wool soaked in the virus; others inject into the jugular, and others, again, into the aural vein. No animal should be injected with a high temperature, or yet with any other disease, or even bruises. There has been much argument whether inoculation produces the same disease or not, but whatever it produces, it is a great satisfaction to know that it produces immunity.

FOOT-AND-MOUTH DISEASE.

If the virus of this disease reaches the mucous membranes, the animal at once contracts the disease, but it is supposed that intravenous injection or small doses under the skin gives immunity against another attack, for a short period only, and this mere apology of immunity, if it can be called such, probably explains the reason why an animal is only attacked once in a season, but still at the same time, cattle may have it more than once during the same season in some cases, so the immunity in this case is still very doubtful.

VARIOLA VACCINA.

This disease runs a mild course and renders the animal immune against a subsequent attack, and I may add here, that people who milk such cows in this disease with sores on their hands, contract the disease in a mild form, and are immune against the human small-pox.

VARIOLA OVINA.

French veterinarians recommend inoculation in this disease, and speak highly of it, and go as far as to say that one in four hundred is the mortality after inoculation. Professor Gamgee in this country condemns it, and says it increases the centre of contagion.

TETANUS.

Under the influence of gradually increasing doses of tetanus poison, the fluid constituents of the body, more particularly the serum, acquired the property of making the poison harmless, and if this antitoxine serum be injected into another animal, the latter becomes for a time immune. In animals so treated with the toxine, the first result is the production of antitoxine serum and as the treatment is

continued with gradually increasing doses, each re-action is followed to a certain point by an increase of antitoxine. The animal has now acquired more or less complete immunity, and its blood contains the antitoxine, but there come a time when in consequence of the impossibility of giving sufficient virulence, either in quantity or weak in quality, no further re-action takes place, no more antitoxine is produced, and that already developed ultimately disappears from the blood and serum, and if now this serum be inoculated into a susceptible animal, no immunity is given, but the immunity of the original subject remains. It is quite clear that in this stage the antitoxine properties, which have disappeared, cannot explain the continued immunity; but here again comes the great theory that the cells of the body which were at first susceptible are now rendered insusceptible. In a Berliner paper of medicine, it is stated that testing the duration of immunity afforded by serum from various sources, it was found that rabbits treated with serum from the horse, the immunity was lost in sixteen days; in rabbits treated with serum from dogs, was lost in fifteen days; and in dogs treated with rabbit's serum, the immunity lasted for twenty-one days. In this experiment the various kinds of serum were of the same immunising power, and made so by using carefully proportionate doses. From these results, the conclusion may be drawn that the immunity which the serum will give, is different in serum of different animals, and that as a rule the longest immunity will be obtained if an animal is treated with the serum of an animal of the same order.

CATTLE PLAGUE.

For many years attempts have been made to render cattle immune against this disease by the inoculation of the virus, but it was always found that there were strong objections to such a procedure; in fact, when this inoculation did not cause as serious an outbreak as the natural malady, it at least maintained the existence of the scourge. Since, however, the introduction of the attenuation of the viruses by Pasteur, attention has been paid to the weakening of the virus of cattle-plague. By inoculating cattle with the strong virus, the blood, urine, nasal mucus, and milk of the animals in about four days contains the poison. At a more advanced period of the disease, a variety of organisms are seen in these fluids, but investigations have not yet decided which of them is the active agent in the production of the disorder. Experi-

ments have proved, however, that by passing the virus through some of the smaller animals, as the guinea-pig, or by exposing it to a high or low temperature, it becomes attenuated. When this attenuated virus is inoculated into healthy animals, they are no longer susceptible to the infection, and the serum of such creatures when injected into non-protected animals in localities where the plague prevails diminishes their receptivity of infection.

These promising investigations are still being continued, but already enough has been accomplished to allow of hope to be indulged that India, Russia, and other places where it appears will soon be benefited by it.

SWINE PLAGUE.

By passing the virus of this disease through pigeons it is greatly increased in virulence, while by passing it through rabbits it is diminished, consequently a virus was obtained from the rabbit which produced only a mild attack in pigs, and, after recovery, left complete immunity. This way of giving immunity, which is Pasteur's, is not always certain, as a few of the pigs succumb. Lorenx has obtained a better principle, which consists of inoculating serum from rabbits or swine rendered immune by an attack of the disease, or by artificial inoculation. He has also prepared from the serum, which contains the acting principle, some fluid which has removed the inconvenience of inoculating large quantities of serum. This preparation is, so far, not public. We have seen, then, that injection of serum from these immune animals protects against swine fever. This result is almost constant, and may be obtained not only by injecting serum at the same point as virulent blood, but also by the introduction of it at points more remote. If rabbits are immunised against this disease, and then virulent blood, which would soon kill witness rabbits, be injected under the skin, a local suppuration is manifested at the seat of inoculation, and the animal recovers, immune. The serum injected into the jugular vein, simultaneously with an injection of strong virulent blood under the skin preserves equally well; indeed, the injection of the strong virus may precede for a short while the inoculation of the attenuated, but should the strong virus be injected into the veins at the same time as the serum, or a little time afterwards, the serum only retards death. To prove this, an experiment has been carried out, which is as follows:—Two rabbits were taken, one was injected with

virulent blood and attenuated serum into the auricular vein, the other with virulent blood only; the first died in forty-two hours, and the latter in five hours. All rabbits vaccinated against hog cholera, furnish vaccinal serum, and the serum obtained from blood withdrawn five days after the proof inoculation, is as active as that withdrawn at more advanced periods.

It is very true that in a vaccinated animal, the leucocytes are more numerous, and the question might be asked whether the toxines were in the fluids of the blood or came from these cells. This point is still very doubtful, but suppose an india-rubber ring is placed tightly at the base of a vaccinated rabbit's ear, the œdematous fluid collected in the first stage is almost free from leucocytes, yet that fluid if inoculated into non-immunised animals gives them immunity.

In conclusion of a hypothetical subject of this description I have little more to add. There is one point which I might have brought out under the heading of inherited immunity, and that is: Is immunity hereditary and permanent? It is possible no doubt for immunity to be conferred upon the fœtus in utero, during an attack of a specific disease on the mother, or by inoculation during a state of pregnancy, and for that animal when born to maintain it, but can it be possible for an animal immunised before any stage of pregnancy, and then, when that time comes, to hand it down to the offspring? This fact still remains very doubtful.

Immunity produced by an attack of a specific disease must, then, be looked upon as an acquired adaptation of the cells of the body to the specific poison of the special microbe of that disease, and the process of recovery from such an attack is really the development of such immunity, which gradually passes into a more complete form during the course of the disease, and remains for some time, or for a lifetime after the animal has recovered. The antagonism of the products of one organism on another which occurs in mixed infections can never, in all probability, act directly in the body, but through the agency of the cells in the body. Such action may come to play a most important part in holding in check the active poisons until an immunity can be acquired. On the other hand, we may look forward to some future time when it will be possible to procure, by the action of one organism in the body neutralising the action of another, or by means of some antagonising drugs, a method of treating and ameliorating diseases.

ESSAY ON VIVISECTION.*

BY MR. W. D. SIMPSON.

MR. CHAIRMAN AND GENTLEMEN:—The subject which I have the pleasure of bringing before you this evening, viz., Vivisection, although differing somewhat from the usual subjects submitted to this Society, is one of some importance to the veterinary surgeon, and is one which of late years has been made the subject of hot debate, and has been tossed up and down in discussions, where feeling has played as large a part as argument. It has thus become enveloped in a dust-cloud of words, sweeping charges, and irrelevant recriminations, in which it is difficult to keep sight of the central object. The first duty, then, of any one, who wishes to see the truth for himself and to show it to others, is to get rid, as far as may be, of all this turmoil, at least; to keep the door of his own mind close shut against it; to silence any strong prepossessions for one side or the other, and to strive quietly to see the thing which is—not that which he hopes, or fears, or thinks may be. The point chiefly in dispute is the rightfulness of giving pain to animals for certain purposes, consequently, the question which meets us at the outset of our inquiry is—What is pain? Pain (like many other words upon which much depends) is used with a good deal of ambiguity. It is often far from clear even to the speaker, whether he means by it the effect produced upon the nerves or upon the organism; whether he is thinking of what the nerves feel, or of what the creature feels. Yet there is a deep distinction. One often hears it said that a person has undergone a very painful operation, but that he did not feel it because he was under chloroform. As soon as we look at this critically we are inclined to ask, If he could not feel he could have no pain; and if he had no pain, how was the operation painful? And the criticism seems valid. There is evidently a confusion between two meanings of the same word, and confused speaking leads to confused thinking. Let us therefore avoid both by clearly defining the sense in which we use our terms. A moderate stimulation of a nerve produces an agreeable or a useful effect. Nerves were meant to work, and for each there is a degree of activity which is normal and pleasant. Beyond this point, stimulation becomes distressing and injurious, and, with sensory nerves, passes into pain. Pain may therefore be described as the result of the excessive stimulation of a nerve. Of course, if the brain is narcotised

* Read before the Edinburgh Veterinary Medical Society.

it is not affected by this stimulation, though it takes place just the same; and therefore it is not nonsense to talk of a painful operation being performed without pain. But when the brain is awake, and working healthily, it takes note of the excessive stimulation; we become conscious of it, and the result is feeling. This capability on the part of a nerve of being affected by stimuli (independent of the organism) is called irritability; and it lies quite apart from consciousness, and is entirely different from feeling. A muscle cut from a freshly-killed animal has irritability. So when the cerebral hemispheres are removed from a frog, all its nerves possess their irritability, and reflex actions go on as well as if it were a complete creature; but all this time it has no feeling, for it has no organ of consciousness. If, instead of removing these hemispheres, we suspend their action by narcotics, the effect for the time being is as if they were not there. There may be the highest irritability of the nerves, but still no feeling in the creature. All that the irritability proves is that the nerves are sensitive; but feeling is quite independent of this. We have every reason to believe that the brain is always the organ of consciousness, this being taken from human experience, assisted by trustworthy analogy. We have evidence of men and women, who can be questioned and can tell us what they have felt and not felt. We cannot feel without our brains, and we find that wherever the functions of the brains of other animals can be tested, they are like ours in kind, though differing in degree; and that when it is absent, or inactive, there can be no consciousness, and consequently no feeling. As the existence of feeling depends upon the activity of the brain, so it also increases with the more perfect development of that organ, and we naturally expect to find that animals can both enjoy and suffer more as they stand higher on the ladder of being, and than man—the highest of animals—is also chief in sensibility. In the human race we find a certain rough proportion between sensibility and intellectual development, which leads us to believe in a similar proportion existing in the ranks below us. Savages will undergo with equanimity tortures which no civilised man (except, perhaps, under great excitement) could endure; and it is impossible to believe that the prolonged pain of tatooing could be borne for the sake of ornament by anyone who felt it as we should do. It is clear that sensibility must vary, as the supply of nervous force varies, because the same properties which cause us to think a thought enable us also to feel a sensation. If the nervous system is not

easily excitable, a painful stimulus will travel through it slowly, and even while producing its appropriate reflex action, will have little power left to affect the brain, and will produce a feeble effect when it arrives there; whereas sensitive nerves will convey impressions rapidly to a sensitive brain, and the result is a quick and vivid sensation of pain. From this we judge that animals are not as sensitive as man. Their reactions may be as prompt as those of men, because a larger proportion of their nervous energy works through the spinal cord and inferior brain centres, and less is expended on thought. Again, in all that adult human beings suffer there is a mental factor which is almost absent in animals. (It cannot be better described than in the words of Mr. Edmund Gurney, in the *Fortnightly Review*, December, 1881: "The sense of rebellion; the helpless beating about of the intellect; the counting of time and vivid sense that each moment will be like the last; the demand, ever urgent and ever baffled, to find a meaning for such experience; more than all, the sense of wrong that comes from comparison, the consciousness of self as an exception, of clueless isolation, of being marked off from normal sentient life by an intolerable something which none can share—all this points to the close relation of suffering to intelligence). Our most intelligent creature—the dog—has, of course, a memory, and is capable of recalling places and things which have been associated with suffering and disliking them; but, with an average dog, such memory is faint as compared with what we should exert under the circumstances. Among human creatures we see the effect of mental development upon the sense of pain very clearly in the case of children. An infant can be vaccinated without making it cry, if its mind is kept occupied by a bit of sugar, or other attraction held before it; and it will undergo even much more pain, without discomposure, if well amused. But when that child is three or four years older he will understand that something is going to be done to him; he will be terrified at the preparations; neither sugar or anything else will divert his mind; and he will be conscious of all the pain given, and probably exaggerate it from terror. If pain can thus be a secondary thought in the minds of infants, it can be still more so in that of animals. The following anecdote is furnished by a gentlemen, whose house dog met with an accident, by which a large piece of skin was cut from above the eye, so he, being a surgeon, determined to stitch it. So the dog was taken outside and dressed. While this was being

done he was straining and struggling to get away, though never whining nor crying. When released he darted into a shed and seized a bone which he had had his eye upon, and which he had been struggling to reach while undergoing his operation. Other anecdotes about horses and dogs may be furnished. Such cases as these, I think, leave it no longer to conjecture whether animals feel as keenly as we do. We saw by the preceding case that there were reactions (commonly called signs of pain), but which proved more irritability than feeling. Such facts show us that it is not safe to judge of what is terrible to suffer, by what is terrible to witness. In some experiments, especially on the brain (and which appear to be the favourite experiments alluded to by the anti-vivisectionists), it seems to be supposed that it is the infliction of horrors, and ugly expressions have been quoted by people writing against this subject, such as "washing the brain away," "reducing a dog's brain to the condition of a lately-hoed potatoe field," etc. (Miss Cobbe quoting from a German writer), whereas the only pain being given is that to the feelings of tender-hearted people ignorant of physiology; but that appears to have been so intense as to render it necessary to stop the experiments, arrest English enquiry into the functions of the brain, and limit the gaining of experience in the treatment of its injuries to what can be acquired by Nature's experiments upon human subjects.

The next question which meets us is—What is sufficient justification for giving pain, and which, by laymen, is called cruelty, and is most difficult to make them regard at all? But I do not see how the public is a fit judge of this justification. In my opinion none but experts, or rather experimental physiologists, can form any opinion as to their value. Dr. Burdon-Sanderson lays down the rule that "The question of right or wrong depends upon the relation between the purpose of the experiments (or experimenter) and the pain inflicted"; that, "if the purpose is a good purpose, and if the experiment is made in the most skilful way, and no pain not necessary for the purpose be inflicted, the whole thing is a right action." Now, what is cruelty, as the laymen call this infliction of pain? The simplest, thorough definition seems to be—the wanton or excessive infliction of pain. The wanton infliction of pain is that for which there is no justification; the excessive is that for which there is justification in fact, but not in degree. A consideration suggests itself—that it is justifiable to inflict pain upon another for its own good. We act upon this principle constantly, with clear

consciences, and in the cases of those whom we love best. In the education of children, and the care of the sick, so also in the treatment of criminals, we do not hesitate to refuse what is pleasant, and enforce what is painful. But this is not sufficient guide. It is quite possible to do something which is really cruel, for the good of the sufferer. Let us suppose a case. Two children—a boy and a girl—are disfigured by teeth which have been allowed to grow crooked. The mischief has gone so far that it can only be remedied by long and painful treatment. There will be constant discomfort and distress, perhaps for months, and tooth drawing and other very painful minor operations from time to time. The teeth are sound, and there is no danger of worse consequences than the ugly appearance. It is certainly for the children's good that this should be amended, and that the parent takes them to a dentist. But the boy is very nervous and sensitive; he suffers great terror at the mere rattle of the instruments; he is reduced to fainting by the first experience of them, and loses his sleep from pain and general nervous misery. Would not any friend advise the parent—"Give it up; it is cruelty to torment a child for a matter of mere appearance; when he is grown up he can wear a moustache and partly hide the defect; and after all looks are of little consequence to a man?" Whereas, if the boy were sturdy and robust, his father would do well to encourage him to bear the pain for his future advantage. But with the girl, he would be much more unwilling to give up the attempt, and his lady friends would certainly urge him to persevere, reminding him that if her health suffered from pain and fright, she might be nursed into strength afterwards; but that there would never be another chance of saving her from disfigurement; and it would be a serious drawback to her through life. In these two cases the pain is inflicted for the good of the individual, but our judgment of whether its infliction is cruel or not, varies according to the proportion between the pain given, and the object aimed at. Hence we conclude that pain given for the good of the individual itself, may be unjustifiable, if the good to be obtained is not sufficient. We are thus constantly thrown back, for a test of the justifiable infliction of pain, upon a certain proportion existing between the evil of suffering caused and benefit of whatever kind sought to be obtained. If we are convinced that the advantages preponderate, we pursue our experiment or operation with a clear conscience, and it is not cruel. The widest and highest aim

of physiological experiment, whether painful or painless, is the advance of physiological knowledge. Every scrap of knowledge is turned to account sooner or later. The sounder and more accurate that knowledge is, the more trustworthy are the conclusions drawn from it. The more doctors learn of the nature and working of the machine they have to repair, the less likely they are to make mistakes in dealing with it, and be it remembered that a medical mistake may mean a lost life.

(*To be continued.*)

SCIENTIFIC BREEDING.*

BY J. R. KELSO, D.V.S., BARABOO, WIS.

IT is not my intention to present any special method or system to follow in breeding or selection, applicable to all breeds, or suitable to all breeders; neither to eulogise or criticise any particular breed or breeder, fully believing that a more scientific system of breeding can be adopted by the breeders of each individual breed, by a more thorough and scientific selection of sire and dam.

The primitive horse was a diminutive animal, not much larger than an ass, standing about thirteen hands high, the largest specimen not exceeding fourteen hands. The head was disproportionate in size. Pictures of these horses have been preserved to us in a very curious way. There were artists among the cavemen of those days. Their pictures of the horse and other animals, made on antlers and horns, are drawn "with a spirit, a rigor and a fire that would do credit to an artist of to-day." In the Swiss lake dwellings of the stone and early bronze ages, we find not only the bones, but horses' bits made of stags' horns and bronze. These bits are only three and one-half inches wide, hardly suitable for a child's pony of to-day. A cob thirteen and one-quarter hands high requires a bit four and one-quarter inches in width, and a Shetland pony of eleven and three-quarters hands requires a bit of three and three-quarter inches in width, and shoes three inches wide. Modern bits for horses vary in width, from four and one-half to seven inches. In the early and late bronze and iron ages the horse was used for food and was tamed. Then Homer wrote of him being harnessed and used on chariots for war or races, and occasionally for riding, though he was then too small for any very special exercise of that kind. Domestication had not yet commenced to increase

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the size of the animal. After losing all reminiscence of its former freedom, and with the care of man, a sudden improvement was effected in size and adaptability. From such period it has been improved into innumerable races and breeds.

Instances of Increase in Size from Scientific Breeding.—Mr. Anthony Hammond, in a recent issue of *Bailey's Magazine*, states that during the last 150 years the thoroughbred has increased three inches in height. In the racing volume of the Badminton library, it is stated that Poland has produced several thoroughbreds sixteen hands in height. Mr. Hammond also states that, whereas, fourteen hands was formerly the recognised standard for hackneys, previous to 1885 it was increased to fifteen hands, and at the latter date the R. A. Society was induced to allow entries in the hackney class of that height and over.

Again, a Mr. T. Dykes says, "the primitive Clydesdale was the Galloway, the ancient Scottish native horse two inches or so less in height." Again, Lawrence, in 1809, gives the height of the Galloway as from thirteen to fourteen hands. Professor Wallace, of Edinburgh University, 1880, gives the height of the Clydesdale of the present day at from sixteen to sixteen hands two inches.

Reproduction and Conception is the function by which the species is preserved, and is accomplished by the organs of the generation, the union of two fundamental elements, ovum and spermatozoon. The development and growth of animated creatures dates from the instant, when, by the act of impregnation, the egg receives a specific stimulus from a spermatozoon. The impulse thereby communicated manifests itself by cell division and proliferation. Nature proceeds in the development of male and female germs in parallel steps. In the stages prior to union, there is nothing to determine the influence of sex. In character, the sexual contributions are equal, therefore there can be no sexual determinative function for either to exert. Hence, the conceiving elements or cells being equal, conception is the joining of two equals into intimate unity. From the joining of these two equals proceeds multiplication of cells differentiated into embryonic organs, and all this occurs during the nutrient, retentive, and protective pregnancy of the mother. Thus science seems to teach some beautiful lessons in monogamy and the equality of sexes. We find, therefore, that the new individual must contain not only hereditary matter, but that in male and female portions.

Breeding.—Whatever the animal, its form, organisation and general make-up, will be an indication of its true type and character. It is a fixed law of nature that this should be so. To illustrate: the thoroughbred horse is courageous, high-strung, active, sinewy, impatient under restraint, and not given to carry much flesh or fat. The heavy draft horse carries much flesh, is docile, honest in the harness, possessing great bone and sinew, and is, on the whole, more sluggish.

Results of Improper Breeding.—In breeding lies the foundation for disease, bad conformation, transmission of undesirable characteristics, lowered vitality, impoverished nerve power, resulting in a more or less weakened condition of the two great life-giving principles—germ and sperm cells. Great evils result not only from the mingling of the blood of members of the same family, but that of separate and distinct races. In breeding, an opportunity is never lost of securing, early and late, from the willing or unwilling, fit or unfit dam, a colt, calf, lamb, litter or brood. Further, the preservation of all these is aided by all the means of science and art that can be brought into play. What is the result? The weak is preserved at the expense of the strong; "off form" and sub-standard are favoured. Hence we have, as compared with nature's process, the survival not only of the unfit, which would otherwise have been killed off, but the development of all possible deteriorating characters, with some possible grains of wheat amidst much chaff. They are all devoted to the breeding-pen, with a handing on, to generations yet unborn, of all the worst accumulating predispositions of the germ-plasm. In the literature of the Bible we read of the prophet Ezra condemning the Jews in these words, "When I heard this thing, the mixing of the holy race with other races, I rent my garments and my mantle, and plucked off the hair of my head and my beard, and sat down astonished."

This is an age of connivance, supplementing bodily defects and deformities by many and various kinds of artificial appliances. Go to any race track, and there we find examples of what occurred on the Galesville track in 1894, where, out of twenty-seven starters, no less than twenty-six wore hopples. Look at all this work required to cover deficiences. The perfect trotter must have a trotting spirit in a trotting body. We have fallen largely into the habit of looking for speed more to the reputation of a trotting stallion or family than to their way of going. Fast horses of every conceivable variety in shape and conformation are made, for a time, steady

trotters by the use of all sorts of weights, boots, pads, hopples and other appliances. In the application of all these artificial means to make up deficiencies of bodily form, we have largely overlooked the all-important facts of so selecting and breeding, that nature shall supply a conformation that obviates resort to such appliances. I also claim, without fear of successful contradiction, that three times a week, or every other day, is as often as any horse should be used in service. Oftener than this, and the seminal fluid of the sire is immature, and if a colt is produced at all, he will be almost sure to be big-boned, loose-jointed, loosely-muscled, with feeble constitution. Were proper attention paid to this matter, failure to impregnate would occur much less frequently than it now does. Further, in my opinion, better results may be acquired by breeding the dam as near the end of heat as possible, thereby allowing the ovum full time for maturity.

Heredity, as generally understood, implies the contribution of two sex elements, male and female. These are considered to offer certain constituents, however different they may be supposed to be, bearing certain hereditary influence, and that in two lines of descent—male and female, contributing their hereditary proportions, not only of the present type, but of type far distant. When the dam and sire both possess a due amount of vigour, the foal will combine in itself the most marked characteristics of both, while any quality peculiar to either is apt to be prominent in the offspring. Peculiarities of habit and temper force themselves upon the notice of every person familiar with domestic animals, and by close observation we notice that the slightest peculiarities are transmissible. Few people will gainsay the fact that brain power is hereditary, as we have ample proof in human beings, and as is also well demonstrated in homing and tumbler pigeons, the young birds nearly always inheriting the homing and tumbling propensities of their parents.

The results of training must not be confused with heredity. Heredity, the nascent power of training, has always been present, more or less, in the animal. Training in such lines as faculties may exist, develop it, intensify it; the more of each, the more may be expected as the combined result. Therefore, who would attempt to train a Clyde except for draft, a hunter except for clearing obstacles, or a trotter except for trotting. These laws govern heredity in the brute creation, as persistently as they do in the human family, and the introduction of good, or the eradication of bad qualities will be found amenable to the breeder's science through the

potent agency *selection*. This forms the stepping-stone to scientific breeding, and until man has learned to take advantage of the hereditary tendencies toward good qualities, and work away from those that bring bad forms, bad temper, sterility, tendency to short life, and unpromising progeny, he is not worthy of being called a breeder of improved domestic animals.

Selection.—A sire or dam should be rejected for any one really bad fault. The greatest strength of either is limited by his or her worst point. They are often selected because they possess one or more very good points. This is a wrong principle in selecting. The selection of sire and dam should begin by rejection for bad points. Brood-mares should be selected with as much critical scrutiny as stock horses. Individual excellence is the criterion always in view, and embraces size, form, blood, colour, performance, ample and facile breathing apparatus.

I firmly believe in a balanced structure for the greatest physical capacity. Moreover, I contend that the undue development of one portion of the organism is plainly at the expense of its co-ordinate part.

Applying these conclusions to the horse, I contend that when the horse is balanced, that is, when he measures as high at the "coupling" as he does at the withers, and as long from the shoulder points to the posterior projection of the hip as he is high from the ground to the withers and the coupling, and has perfectly proportioned limbs, and other essentials, such as blood elements and development, he can perform his duties, be they that of the draft or the race horse, with greater effect than if the mechanism is out of balance. Therefore, to breed the natural born, actual trotter with the most certainty and the best results, combine the true and tried genuine producers of such. This principle holds good in all breeding.

In the future, when a more accurate science is applied to breeding the trotting horses than merely the intensification of his trotting blood, and physiological perfection receives its adequate attention, defective construction of shoulder and hip, of elbow and stifle, will be so far remedied by judicious breeding of perfect specimens, that there will be neither splay-footed, nor pigeon-toed performers on the trotting turf. Physiologically, much more than in trotting potency, the perfect American trotter is in the distant future as a type.

Cases.

CIRRHOSIS OF LIVER.

BY ROBT. CARTWRIGHT, ESQ., WOLVERHAMPTON.

A BAY HORSE, the property of the Wolverhampton Tramway Company, had, along with several horses in the same stable, an attack of influenza. They suffered from a high degree of fever, the mucous membranes being very much injected and yellowish. There was pharyngitis and laryngitis, complete loss of appetite, accompanied by great muscular weakness.

All the cases recovered speedily, with the exception of the one in question. This horse seemed to recover slowly, feeding very indifferently, the coat and skin having an unthrifty look. Not much change took place in his condition for two months. About this time the horse commenced to lose flesh rapidly, the pulse became dicrotic, there was palpitation of the heart. The conjunctiva and other mucous membranes, were much injected, and of a deep orange colour.

There were evidences of cerebral disturbance (probably from bile salts circulating), the animal walked round the box in a dazed condition, and gradually getting weaker, died on Feb. 21st. The *post-mortem* showed all the organs healthy, except the liver, which was very much enlarged, and presented the same appearance throughout as the piece that I sent to you.

(The portion of liver was examined, and was seen to be paler than normal—a drab colour, in fact—while through the cut surface numerous lighter coloured bands were seen to run. Its consistence was firm, and it offered a good deal of resistance to the knife. Microscopic sections showed the hepatic substance to be invaded by a diffuse cirrhosis, accompanied by marked fatty infiltration.

The occurrence of brain symptoms should be noted; they very often attend grave lesions of the liver in horses.)

TUBERCULOSIS OF THE HORSE.

BY ROBT. CARTWRIGHT, ESQ., WOLVERHAMPTON.

ROAN PONY, six years old, in good condition, the property of a gentleman, was brought to my infirmary. The animal was said not to be feeding well.

On examination the submaxillary lymphatic glands were found to be filled, the nose was poked out and to all appearance there was considerable soreness of the throat.

There was marked depression and dulness and the pony moved very stiffly. The symptoms shown were very like those evinced by an animal breeding an attack of strangles, and the animal was accordingly treated for that disease.

The throat was blistered and the swelling in the submaxillary space disappeared with the exception of a small hard nodule which remained in the gland.

The animal continued to lose flesh rapidly, fed indifferently, became hide-bound, tucked up; there was tenderness on percussion over the ribs. On the pony being exercised it made a noise resembling that produced by a whistler.

The general appearance of the patient at this time, was that of an animal suffering from bastard strangles, and recurring attacks of colicky pains suggested the probability that some of the abdominal lymphatic glands were the seat of secondary abscesses.

As the case was a hopeless one I had the mare destroyed after about six months' observation and treatment.

Post-mortem examination revealed the liver and spleen to be the seat of very numerous hard whitish dry deposits, which Professor Williams states to be tubercular. The other organs were quite healthy.

DIPHTHERITIC CONDITION OF THE URINARY BLADDER.

BY H. SNARRY, ESQ., M.R.C.V.S., YORK.

GUERNSEY COW, calved over a week before the time, cleaned all right: went down next day with signs of milk fever.

A calving drink had been given both before and after parturition, and the cow was purging freely. When she went down half a pint of whiskey was given and I was sent for. I found the cow in a dazed condition, and she soon went on to the comatose state, and remained so for over twenty-four hours. She then began to show signs of consciousness, raised her head, and took sloppy mash, and gave one the impression that she would go on all right. Unfortunately, however, she had a relapse, the appetite was again in abeyance, she groaned, was very restless, and showed other signs of being in pain. These painful symptoms were not constant, they came on at intervals. The fæces were one day yellowish, and next day very dark. I "raked" her and she afterwards strained violently as if to pass something. I passed the catheter and the urine was normal in appearance

one day and a day or two after it was very high-coloured—blackish, in fact. The principal thing noticed towards the end of her life was that immediately after she drank water or was drenched with medicine or gruel she commenced to be distressed, breathed very quickly, and seemed to be suffering a great deal of pain. She also strained now and then. I treated her with hydrate of chloral and opiates for the most part.

On *post-mortem* examination, with the exception that the leaves of the third stomach were somewhat inflamed, the abdominal organs appeared quite healthy.

The bladder, however, presented a very peculiar appearance. It contained about a quart of black fluid, its walls were greatly thickened, and were covered by nodular masses ; on scraping these a blood-stained membrane was detached, showing ragged-looking ulcerous patches below.

RUPTURE OF THE STOMACH AND VOMITION IN A HORSE.

BY H. SNARRY, M.R.C.V.S., YORK.

CHESTNUT draught gelding, eight years old, slightly touched in the wind, the property of a firm of millers. They have had him a year and a-half, and never ailed anything until last Friday. He had averaged journeys of sixteen to twenty-six miles every day. Last week in double shafts. On Friday he had only one companion, taking three tons of goods on a 16 cwt. trully a distance of thirteen miles out. He did not sweat on this day, but on the previous day he was noticed to be sweating freely. He ate and drank alright during the day, and on his return to within two miles of home appeared quite well ; there, however, he made attempts to stop and to lie down, as if griped. He was kept going until he got home ; and, after the harness was removed, he speedily went down, moaned, and even screamed with pain, and sweated profusely. He did not try to get on his back, but often rolled half over. He got very cold, though still sweating, and trembled. It would be about 8 p.m. when the horse showed signs of pain on the road, and about 9.30 when I saw him. The first thing that I noticed was a thick string of saliva hanging from his mouth, and a discharge of frothy material from the nostrils. He was lying stretched out and moaning ; the abdomen was tympanitic. When I put him up he trembled, and commenced to draw in his neck and retch, and with the effort a dirty fluid came down the nostrils and out of the mouth.

At times the head was held right up in the air, as if there was spasm of the stomach. He had passed fæces and urine during the day, but only some small droppings of the former since his return. A colic draught had been given, and the chest and body had been rubbed with turpentine. I gave him--

Bismuth subnit., ½ oz.,
Acid acetic, 1 dram,
Chloral hydrate, ½ oz.,

as a draught. After this he seemed easier, and the retching stopped.

Soon the pain returned; he lay down, and stretched himself out at times.

I left two anodyne draughts, to be given if necessary. He was left about 4 a.m., standing up and quiet, and continued in this improved condition until 9 o'clock, when he again commenced to show pain; there were cold sweats, tremblings, followed by vomiting.

I was called again, and I never, except on one occasion, saw an animal display such violent retching, or beheld such quantities of food from out of the nostrils and mouth. He stood with his head pressed in a corner, then turned round, plunged forward at the door, went down, and was up in a moment and quickly down again. Finally he made a desperate plunge, almost a somersault, and died.

Post-mortem.—I found a rupture of the pyloric part of the stomach, three inches in size, some inflammation, but by no means intense, of the small intestines; the large intestines contained very little fæces. I saw nothing that would account for the rupture. The food has always been bruised oats, bran and split beans. I may mention that the case of vomition, which was more violent than the one recorded above, was due to a large cluster of bots which had become detached from the cuticular portion of the stomach, and had got impacted in the pyloric orifice.

FRACTURE OF PREMAXILLA.

BY J. M. STEWART, ESQ., M.R.C.V.S., STIRLING.

THE following case can hardly fail to have interest for your readers on account of the extraordinary conditions that gave rise to the accident.

On January 30th last, I received a telegram to go to Mr. Monteith's Wright's park, Kippin, to see injured horse. On my arrival I found a bay carriage horse, six years old, and

was informed that he had injured his mouth with the rack chain with which he had been playing, and while having the chain in his mouth one of his teeth had got fast in a link, and he only got it free after much struggling.

On examining the mouth, I found that the left half of the body of the premaxilla, carrying the three incisor teeth, was protruded fully an inch below the level of its fellow of the other side.

The piece was freely moveable and on careful manipulation I soon discovered that I had to do with a fracture right through the symphysis and also through the left external process of the premaxilla, the fracture running obliquely from above downwards and forwards to the interdental space between the corner incisor and the tusk. The piece was so freely moveable that I am inclined to think that the fracture extended between the symphysis of the internal processes of the bone as well. After a good deal of manipulation I managed to get the bone pushed back into position and then I included all the incisors in a piece of stout copper wire, twisting it firmly with a pair of pliers; the ends were further twisted round the left tusk; the animal was kept on soft diet only for a week. After that, hay was allowed and in four or five weeks recovery appeared to be perfect and the horse was put to his usual work.

This case is useful in one way; it shows the firmness with which the incisors are implanted in the gums and points to the futility of attempting their removal.

I may state that there is no doubt as to how the accident happened: the chain was seen with the corner incisor fast in the link.

EXPERIMENTS WITH BARIUM CHLORIDE.

BY J. J. MCCARREY, MAGILL UNIVERSITY.

THE following cases show the results of some experiments recently made by the '96 Journal Club with barium chloride as a therapeutic agent in the treatment of colic. This drug was brought to the notice of the profession by Dieckerhoff, who highly recommends it on account of its prompt and efficient action in producing peristalsis and its low cost as compared with pilocarpin and eserin.

Case I.—Bay gelding, aged, weight about twelve hundred pounds, subject for experiment. Received an intravenous injection of one gram of barium chloride in solution. In four minutes the peristaltic murmur was much increased, followed

by the evacuation of fæces. In nine minutes another evacuation occurred and again in twenty minutes. The pulse and temperature remained unchanged.

Case II.—Bay mare, weight about one thousand pounds, suffering from spasmodic colic. Was given an intravenous injection of one gram of barium chloride in eight c.c. of water. In three minutes there was considerable straining and increased uneasiness. In five minutes the animal defæcated, the fæces being hard. In thirty minutes fæces were again expelled and at intervals of a few minutes for an hour, each evacuation being softer than the preceding. Straining was marked between evacuations, indicating violent peristalsis. In this case there was a slight increase in pulse, respiration and temperature. In three hours the animal showed no symptoms of colic and the effect of the drug had apparently ceased.

Case III.—Bay mare, aged. Received a subcutaneous injection of 1.2 grams of barium chloride in 10 c.c. of water. One minute after injection the animal appeared uneasy. In fifteen minutes after she commenced to strain, but no evacuation occurred till half an hour after receiving the injection. After this, at intervals of a few minutes, evacuations occurred, continuing for about an hour and a half. No change in temperature or respirations, but the pulse was slightly accelerated.

Case IV.—Brown gelding, aged, suffering from spasmodic colic. Received intravenously one gram of barium chloride dissolved in about 10 c.c. of water. Fæces and flatus passed in nine minutes although straining was noticed about one minute after injection. Evacuations took place at intervals of a few minutes, continuing for half an hour, although there was an abatement of colicky symptoms immediately after the first evacuation.

Case V.—Bay gelding five years old, showing similar symptoms to preceding case. Received one gram barium chloride dissolved in 10 c.c, water, intravenously, in the jugular vein. Fæces were not passed till twenty minutes had elapsed, but after that at intervals of five to fifteen minutes. Did not recover from colic for three hours, although the violence of the symptoms were much lessened after the first evacuation.

Case VI.—The subject in this case was a thoroughbred mare, five years old, and in about the fifth month of pregnancy. The animal was taken with colic at 9 a.m. Anodynes were given with warm water injections. This treatment was continued through the day without any improvement. At

8 p.m., as a *dernier ressort*, it was decided to use barium chloride, the use of which had been delayed on account of the state of pregnancy. At 8.15 p.m. an intravenous injection of 15 grains in 5 c.c. water was given.

At 8.19 the first symptoms of the action of the drug were noticed. The animal lay down and strained violently. Five minutes after flatus and a small quantity of almost liquid fæces were passed. Straining continued at intervals for half an hour without the passage of fæces and the colicky symptoms were apparently aggravated. At 9 p.m, rectal injections of warm water were given and an exploration revealed the fact that the colon was filled with fæces which were passed a few minutes later.

The animal made a complete recovery.

BLOWING OF CALVES.

BY E. SAINTHILL PEARSE.

THE blowing of calves, for the purpose of making the veal have that puffy and inflated appearance so commonly seen and appreciated, is produced by a most disgusting and insanitary process. It is done in this way: the butchers put a blow-pipe through the skin, and one man blows into it with his mouth, and another man beats the hide with a gambrel, so as to diffuse the air over the carcase of the animal. Now, where the disgusting part comes in is that the breath of the man is diffused through the whole of the cellular tissue of the animal. The man so blowing may be a smoker or a drinker, with foul breath, perhaps half drunk whilst doing it, or he may be suffering, or has suffered, from some infectious disease that anti-vaccinators would howl at the chance of being conveyed into the systems of their children through vaccination, but see no objection to their taking a food that is liable to be infected in a greater degree. I will give you a case in point. A butcher in ——, who was considered to be the best dresser of veal in the district, had his breath so frightfully foul that when his fellow-tradesmen went to —— Market on Wednesday mornings, they waited on the platform to see into which compartment he went, they then entering another, as they could not stand the stench of his breath. Now, I do not object to the blowing of veal providing it is done in a mechanical way, which it can be by using a pump, such as is employed in inflating pneumatic tyres.

CLINICAL CASES

IN THE PRACTICE OF H. THOMPSON, M.R.C.V.S., ASPATRIA.

No. 1.

Parturition—Maternal Dystokia—Torsion of the Uterus.

EARLY on Sunday morning, March 29th, we were requested to attend a cow that was said to be "set at calving." On arrival we found a black polled cow (which had been bought at an auction mart on the day previous), exhibiting all the signs of parturition, but accompanied by no presentation of membranes or fœtus. Manual examination revealed the fringe of the os fairly open, but obstruction of the passage at a point further on.

As the labour pains were not very strong, a little extract of belladonna was applied to the os, and as far forward as could be reached, and we left, promising to return in an hour or two.

At 11 a.m. we again saw her, and found things much as formerly, except that the animal looked decidedly duller and breathed more heavily, its body being here and there covered with a dewy sweat.

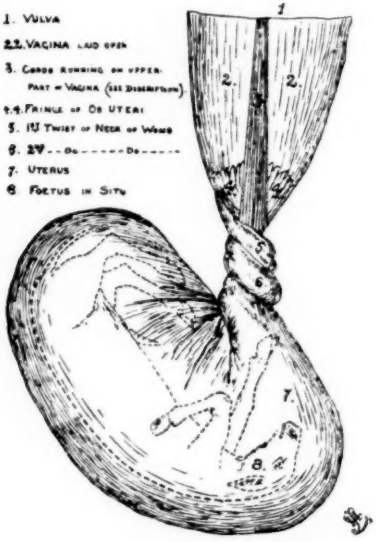
On introducing the hand, two strong cords resembling ligaments were found to run along the roof of the passage from the vulva to the os, ultimately becoming lost in the obstruction, into which the fingers could not be inserted. By examination, per rectum, a hard body, like the turn in a twisted walking-stick, could be distinctly felt at the neck of the womb. There was now no doubt that the impediment to parturition was twist of the cervix, and that of more than ordinary character. Rolling the cow from left to right produced no change in the parts, or the same operation in the reverse way; so that, after giving whisky 1 pint, we were reluctantly compelled to again leave her alone, and wait patiently.

We saw her again in the evening, when she looked brighter, though there was no alteration in the condition of the uterus. Gave Ol. Ricini, 12 ozs., and decided to leave her over night. Next morning she was still the same and remained so all day.

On Tuesday she was slaughtered and the *post-mortem* showed a double twist of the neck of the womb running from right to left as shown in the accompanying diagram.

Mr. Thompson has met with several cases of partial twist, both in the mare and cow, which have been successfully reduced by "jamming," or casting and rolling, but this is only the second case of double twist he has come across. Both of

these had to be slaughtered, on account of not being able to get the hand through the twist in the neck so as to bring a portion of the fœtus forward to assist in undoing the obstruction. Mr. Thompson notes that four of the cases of twisted uterus occurred in black polled cows.



Double Twist at Neck of the Womb in a Calving Cow.

No. II.

Parturition—Fœtal Dystokia—Monstrosity—Ectopia Abdominalis.

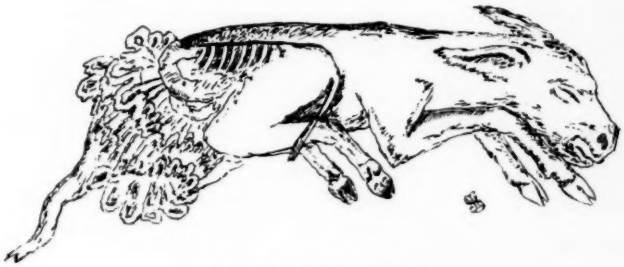
The above occurred on Monday, March 23rd, when a roan short-horn cow (2nd calf) was unable to expel the fœtus.

The head and two feet, were presented, but on account of one of the legs being malformed, especially at the knee, it was necessary to make a careful examination to determine that both legs were fellows. Whilst doing so two feet were found on the floor of the pelvis, well forward to the chest of the calf on each side.

Diagnosis.—Monstrosity, but not yet aware of the ectopia.

The head and fore feet were roped, and endeavours made to push back the hind feet while traction was applied to the head and fore limbs, but these attempts were of no use, so embryotomy was determined on. The fore legs and shoulders were removed, and attempts made to repel the hinder limbs while pulling at the head, but again no advantage was gained.

With the long embryotomy knife the true ribs were cut through and the heart and lungs extracted, but no abdominal viscera could be found, as the fœtus was bent on itself, so leaving no doubt as to the ectopia.



A MONSTROUS CALF

The head and neck were then skinned and cut off, and the skin carefully tied over the cut ends of the bones so as to prevent laceration of the uterus.

Cords were now fixed to the hind pasterns, and strong but steady alternate traction applied, while the body was pushed back into the womb, where it, so to speak, turned a somersault, and by more steady pulling the calf was extracted and found to be of the nature above named. Its spine was curved downwards from right to left; there were no abdominal walls; the hind legs were tucked up towards the chest with the viscera floating free in the uterus, as shown in the sketch. The operation took fifty-five minutes, and the cow ultimately did well. It should be mentioned that during the operation the passage was kept constantly lubricated with hog's lard, and that after all was over it was well dressed with carbolized oil.*

* The above cases recorded by Mr. James Spencer Smith, M.R.C.V.S., assistant to Mr. H. Thompson, Aspatria.

INFLUENCE OF RAINFALL ON BURSATTEE.

BY JOSHUA A. NUNN, F.R.C.V.S., PRINCIPAL, LAHORE VETERINARY COLLEGE.

A DAMP climate has by some authors been looked upon as an important factor in the prevalence of bursattee ulcer in the horse, and I am therefore induced to send the following facts, as they may be of interest to your readers. The summer of 1895 was an abnormally dry one all over India, but especially so in the Punjab and the north.

MONTHLY AVERAGE RAINFALL AT LAHORE DURING SUMMERS OF 1894 AND 1895.

Months.	Normal average rainfall.	Actual rainfall, 1894.	Actual rainfall, 1895.	—
April	0·46	0.40	1·28	
May	1·03	0·04	—	
June	1·84	7·54	1·49	
July	6·67	3·54	1·16	
August ..	5·83	3·60	4·64	
September ..	2·49	2·10	—	
Total for six months	18·32	17·22	8·57	

The total rainfall for the six months of 1895 is half that of 1894. The number of cases of bursattee admitted during the six summer months of 1894 was sixteen, and for the corresponding period of 1895 eight.

Lahore, March 18th, 1896.

HYPERTROPHY OF THE PROSTATE GLAND.

BY JOSHUA A. NUNN, F.R.C.V.S., PRINCIPAL, LAHORE VETERINARY COLLEGE.

IN the August number of THE VETERINARY JOURNAL for 1895, page 131, I reported a case of hypertrophy of the prostate gland in an aged gelding, that presumably had occurred some considerable time after castration. Another case of the same nature has come under my notice. The patient, an aged Australian gelding, had been cast and sold out of the Royal Artillery. There was no previous history to be

obtained, but his present owner, in whose possession the horse had not long been, said he had been cast for old age and not for any medical reasons. He consulted me on account of the difficulty the horse had in urinating, which kept dribbling away from him for a considerable period, alternating with a regular gush of fluid. A calculus was suspected, but on attempting catheterization, the instrument was stopped in the prostatic urethra, and no reasonable amount of force could get it further. Rectal examination showed hypertrophy of the middle lobe of the gland, which was greatly enlarged. Although carefully searched for, no trace of a calculus could be discovered in the bladder, which was empty. The owner was leaving Lahore that day, and was unwilling to carry out any further treatment, and as he took the horse with him, the case has been lost sight of.

TWO CASES OF PARALYSIS IN DOGS.

BY JOHN H. WRIGHT, M.R.C.V.S. (J. & A. LAWSON'S, MANCHESTER).

On the 27th of January of this year, I was called out to see a collie dog supposed to be thirteen years of age. On arrival found him to be suffering from pneumonia, for which he was treated, and made a good recovery. To my great surprise, I was again called out to see the same dog, finding him completely paralysed in the hind quarters. I gave him hot baths for three days, rubbing on back (from which I clipped away the hair) some stimulating liniment, and ordered hand rubbing of the extremities. Afterwards I used hot water bandages, giving internally Nux Vomica and Sp. Æth. Nit., removed fæces, and gave a few injections. The dog gradually but slowly improved, and the owner hearing that there was but faint hope of recovery from paralysis, consulted me with regard to destroying him, but was persuaded at last to let him have a fortnight's reprieve, with the result that the dog is now quite well. For a week during his first illness, and also during the first week of paralytic attack, he had lost all appetite, and had nothing but bovril, milk and eggs administered in spoonfuls.

The second case was on February 24th, being a lady's pet fox-terrier bitch, brought to the Infirmary completely paralysed behind; the history being that on the previous Saturday it was quite well, and out for a walk with the family. On Sunday morning was found in the above state, and they had heard her in the night fall downstairs. On examination and giving her an injection, I found her bowels to be very constipated; gave a purgative draught

and a warm bath; the latter I continued every morning for a week, with weak stimulating liniment applied to the back, following up with hot water bandages for a fortnight. I administered Nux Vomica, m. xv., twice a day, and increased it weekly until it reached m. xxx., together with Sp. Æth Nit., and doses now and again of Syr. Rhamni, her food being bovril and milk. She gradually improved, and the week before she left I gave her shocks once a day with the galvanic battery. She went away quite recovered.

Both animals being old and the recovery doubtful, I hope the above two cases may be of some interest to the numerous readers of the VETERINARY JOURNAL.

Editorial.

"LET GLASGOW FLOURISH."

So runs the motto that has been adopted as its pass-word by one of the greatest cities in the world. It claims to be the second city in the British Empire in point of population, and boasts of its material wealth. These are points rather to be discussed by the statistician and the economist than by the editor of a scientific journal; what concerns my readers more closely than details of population, area and rental, is the intelligence displayed by the municipality of the so-called Western Metropolis. Judged from the veterinary surgeon's point of view, this is very low indeed—so low that it is almost invisible or, perhaps one might say, beneath notice. Glasgow is one of the two Scottish towns that possess veterinary and other colleges; it ought, therefore, to be one of the centres of light and leading. The Principal of the Glasgow Veterinary College, a man whom I am proud to call my friend, is one of the most experienced and most accomplished surgeons in the country, and thoroughly competent to advise any body of popularly-elected magistrates with regard to veterinary matters. He is assisted in his scientific and administrative work by an able and highly-trained son, who, in addition to other titles, can write M.D. after his name. Further, Principal McCall has a body of capable men attached to his college; and then, in addition to all this, there are in Glasgow a great number of veterinary surgeons whose services might be utilised by any corporation with great advantage to the community. Now, let my readers mark the wisdom which the Glasgow authorities display in the important matter of the choice of meat inspectors, the thankfulness they show to Providence for the easiness of their task, caused by the

wealth of talent at their command, the generous way in which they treat their distinguished fellow-citizens. Of course, my readers will expect to find Principal McCall at the head of the list of inspectors. Alas! no, he is not on the list of inspectors at all. There is not a single veterinary surgeon among them. The corporate wisdom of the city entrusts the welfare of the inhabitants, so far as meat inspection is concerned, to three butchers and nine policemen! I begin to wish that I had not been trained to the veterinary profession. If I or my parents had only had sufficient foresight I might have been a policeman, and then such chances of promotion as I should have had! When the late Lord Brougham, at that time Lord Chancellor of England, went to visit Cannes on one occasion, he was invited by the municipality of the little French town to a banquet, which was held in honour of the generous Englishman who had done so much to promote the prosperity of the place. In proposing his health the chief magistrate, after wishing the honoured guest all sorts of prosperity and good fortune, grew very fervid in his eloquence and said he hoped that Brougham, rising from glory to glory, might come one day to be even Lord Mayor of London! The worthy Frenchman could conceive of nothing higher. The next time I propose Mr. McCall's health I shall express the hope that he may some day rise to be a policeman and then, after a year or two spent in that capacity, retire full of wealth and glory. Really I fear that the police service is a profession neglected by our rising young men. Let Glasgow flourish and let us all thank her for her sapient advice to those about to become veterinary surgeons.

More remains to be told. I have before me at the present moment a copy of a memorial drawn up by the Corporation of Glasgow for presentation to Parliament, containing the following amendments to certain provisions of the Public Health Bill for Scotland, already before Parliament. From them I extract a paragraph which refers to our profession :—

It is further to be observed that section 24 of the Glasgow Police (Amendment) Act, 1890, comes into direct conflict with the provisions in clause 60 of the bill in regard to the examination of dairy cattle. In the bill the medical officer can only inspect the dairy if "authorised by an order of the sheriff, magistrate, or justice," and the cattle therein, if in addition he is "accompanied by a veterinary inspector, or some other properly qualified veterinary surgeon," whereas, in section 24 of the Glasgow Police (Amendment) Act, 1890, already mentioned, the medical officer or the sanitary inspector, or any person acting under their orders, may from time to time enter any byre or cow-shed, wherever situated, if the milk produced therein is being sent for sale within the city, for the purpose of examining any cow

kept therein for the supply of milk, in order to determine whether such cow suffers from any disease which might render the use of the milk dangerous or injurious to health. The facility with which this power can be applied in the detection of animals suffering from disease which, while it may be infectious, does not become epidemic (of which tuberculosis is an illustration) is readily appreciable, and any interference with it at the present moment—in view of the opinion expressed by the recent Royal Commission on Tuberculosis to the effect that "the largest part of the tuberculosis which man obtains through his food is by means of milk containing tuberculous matter"—would appear to be particularly inopportune. Moreover, the proposal in the bill to make the inspection of cattle by medical officers contingent on the presence of a veterinary surgeon seems to have no justification either in necessity or expediency. Medical men first pointed out the special diseased conditions in cows, which entail grave risk to the consumers of their milk, and it would be difficult, if not impossible, for the medical officers of many counties in Scotland to find a "properly qualified veterinary surgeon." The clause ought merely to enable local authorities to order inspection by a veterinary surgeon if they are so advised. It would further appear that the powers to prohibit the retention in byres of animals affected with tuberculosis, and the sale of milk from such animals, contained in Sections 26 and 27 of the Glasgow Police (Amendment) Act, 1890, would be rendered inoperative if the power in Section 24 of the same Act is interfered with, as it would be by Clause 60 of the bill.

This is a deliberate and intolerable insult to our profession, and is an attempt to deprive us of our just share in the administration of the Public Health Bill. It means that we are mere useless excrescences on the social body, and hindrances to the benevolent action of medical men; it unduly magnifies the importance of the one or two discoveries of the medicals, and totally ignores our many and valuable discoveries; it would lead the public to believe that the special study of disease in the lower animals is of less value than generalisations formed from the study of human diseases: this, of course, is illogical and absurd, but it is none the less pernicious, and it must not be allowed to pass unnoticed and unrebuked. There is a constant stream of active and energetic young men flowing into the veterinary profession, and these young men are yearly improving in intelligence and conscientiousness; there ought, therefore, to be—there is—no dearth of properly qualified veterinary surgeons in the country. It is equally true that the ranks of the medical men are full to overflowing, and that some of them are glad to make a living by attempting work for which they are but poorly equipped. We may pity such men, but we cannot allow them to interfere with our privileges or meddle with what they do not understand. We have suffered enough from the establishment of the Animals Department of the Board of Agriculture; let us checkmate this move on the part of the Corporation of Glasgow, and all similar attempts to betray and degrade us.

In last month's issue of THE VETERINARY JOURNAL, there appeared a brief summary of a lecture (the joint work of Messrs. Smith Greig, and Meek, of the Durham College of Science), which was a report on a series of experiments towards the determining of the cause of Louping Ill in sheep, and which has occupied their time and attention during the past twelve months.

It is not my desire or intention to aim at minimising the results of the labour my fellow-workers in the field of science have expended towards this end, but I have thought that a brief history of the work and time that has been devoted by me to discover and elucidate the cause of this fatal disease, may be of interest to my readers.

In the year 1867, in which year I was appointed Principal of the Dick Veterinary College, the prevalence of Louping Ill in certain of the sheep districts in Scotland, was brought to my notice, and from that time until now my scientific interest in the disease has never been laid aside; my investigations into this, and other diseases of the sheep, having been made under circumstances of the most favourable kind. Among others, the celebrated and greatest breeders of black-faced sheep in Scotland, the Messrs. Archibald, have afforded me, on their various sheep farms, every facility during the long period of years that has elapsed, to pursue my researches, initially entered upon, I may state, from motives of friendship, and a desire to lessen the loss in their valuable flocks, and in those of other breeders, which occurred annually from this disease and other diseases.*

I found, however, I had set myself no light task. Confusion worse confounded prevailed regarding Louping Ill. The diseases Braxy in its two forms, the cerebral effects of wool balls in the stomachs of lambs, sturdy, shorter-ill and stomach staggers, were looked upon as this disease in very many instances. Hundreds of *post-mortem* examinations were made by me, with the good result that I was enabled to differentiate those diseases from true Louping Ill, and to demonstrate it to be one of a specific nature, due to the presence of a micro-organism in the system of the affected sheep. In 1881, the Directors of the Highland Agricultural Society requested me, under their auspices, to continue my investigations, and to report their results to them for the benefit of the agricultural community of Scotland. The conclusions I arrived at regarding the cause of the disease, viz., Ixodes or "Tick," the preventive measures necessary for their

* I may state that Louping Ill is now unknown on Messrs. Archibald's farms.

extermination, the nature of the herbage that forms their habitat before they attack the sheep, and the changes they effect upon the cerebral and spinal nervous tissues, are fully recorded in the many editions of my work, "The Principles and Practice of Veterinary Medicine."

Messrs. Smith Greig, and Meek, have done me the honour, in the pages of the *Veterinarian*, of making a slight reference to my investigations connected with Louping Ill, and not in too flattering terms, but in no particular do they throw more light on the nature, origin, and symptoms of Louping Ill than are already known. It is but natural to expect that I, having devoted an average lifetime to its study, should view with very great interest the work that is being done by other investigators regarding it, and I beg to remind these gentlemen and other observers, that it is outside the laboratory walls accurate research must commence; and that a thorough practical knowledge of this disease, as exhibited during the life of the sheep, is absolutely necessary to gain that accuracy. I have above indicated the difficulties in this direction, and have no hesitation in attributing the varied pathological appearances described by different observers to the fact that cases of true Louping Ill have not always been submitted to them for *post-mortem* examination, as among the many diagnosed as Louping Ill cases by me, and examined within twenty-four hours after death, I seldom or never failed to discover cerebro-spinal effusion, exudate or gelatinous change in the nerve tissue, singly or combined.

Judging from some of the statements made by Messrs. Smith Greig, and Meek, in their report, I am inclined to think that, accomplished bacteriologists as they may claim to be, they are not the most correct observers of sheep while suffering from Louping-Ill. They state that "the fore limbs are often paralysed, and that the paralysis necessarily brings the animal to the ground, although it may be able to crawl about by the aid of the unaffected legs." It follows, if the fore-limbs are paralysed, that the sheep must move backwards to feed. In all my experience so grotesque a movement has not been seen by me. More likely the hind-limbs will participate when paralysis of the fore-legs exists. Again, it is remarked, "the eyes are often oblique." I presume that strabismus is meant, as in all sheep the eyes are set obliquely in their heads. I look forward with pleasure to further reports from these gentlemen on Louping-Ill, to compare, and I trust benefit in the investigations I am still carrying on with as much zest, as on the day I commenced them, twenty-nine years ago.

BEFORE we go to press this month, the issue of the voting papers for the election of those members of the profession obtaining the largest number of votes to fill the annual vacancies in the Council of the Royal College of Veterinary Surgeons, will be an accomplished fact. Mr. John Hutton, F.R.C.V.S., Kelso, is an aspirant to the honour, and the nominee of the Scottish Metropolitan Veterinary Medical Society.

Scotland is numerically but weakly represented on the Council, by reason of the unavoidable expenditure of time and money incurred in attending the meetings in London, and it is to be hoped that when a gentleman comes forward, able and willing to face these contingencies, the profession generally will extend their suffrages towards securing his election.

Mr. Hutton's record is a good one, he being, moreover, in every respect eminently qualified to assist in the business that comes before the Council. When the voting papers are being returned, I trust he will receive the amount of support necessary to obtain that honour.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

A QUARTERLY meeting of Council was held on Wednesday, April 22nd, at 10, Red Lion Square, James F. Simpson, Esq., in the chair. Present: Professors Dewar, Edgar, McFadyean, Penberthy, Pritchard, Shave, Thompson, and Williams; General Sir Frederick Fitz Wygram, Messrs. Abson, Barrett, Bower, Dollar, Faulkner, Fraser, Hartley, Hunting, Kidd, Lawson, Locke, Mason, Mulvey, Peel, Trigger, Wragg; Mr. Thatcher (Solicitor), and Mr. A. W. Hill (Secretary).

Correspondence.

The SECRETARY read a letter from Sir Matthew White Ridley, Bart., acknowledging the receipt of the Council's letter of condolence on the occasion of the death of Prince Henry of Battenberg, and informing the Council that it had been laid before Her Majesty, who was pleased to receive the resolution. The letter was ordered to be entered on the minutes.

The SECRETARY also read a letter from Mr. Pack, Hon. Secretary of the Southern Counties' Veterinary Association, with regard to the exemption of veterinary surgeons from serving on juries, and the revision of the scale of fees.

It was agreed that Mr. Pack's attention should be drawn to the Council's previous letter.

The PRESIDENT read a letter from the Worshipful Company of Farriers, thanking the Council for their aid in carrying out the provisions of the late registration scheme.

Finance Committee.

Mr. TRIGGER read the report, which was adopted; and on the motion of Mr. LOCKE, seconded by Mr. FRASER, it was resolved that the Finance Committee should be requested at an early date to enquire fully into the financial condition of the College, and report to the next meeting.

Registration Committee.

The SECRETARY read the report, and special reports were read by the SOLICITOR with reference to certain cases. On the motion of Mr. MULVEY, seconded by Mr. HARTLEY, it was agreed that the names of two members of the College should be struck off the register at the expiration of one calendar month.

The SOLICITOR produced an amended form of certificate proposed to be issued by the Victoria University, which was approved.

The Seal of the Council was ordered to be fixed to various prosecutions.

Examination Committee.

Mr. MULVEY read the report, which recommended, among other things, that an interval of three days should be allowed to elapse between the Written and Oral Examinations, so that the written papers might be delivered to the examiners in sufficient time to enable them to consider their awards; also that no alteration should be made in the choice of questions by the students, and the committee considered that biology should be treated as one subject. The Committee reported that a letter had been received from Captain Butler, tendering his resignation as an examiner, owing to his inability to attend the March Examination.

On the motion of Mr. MULVEY, seconded by Mr. LOCKE, the report was adopted.

Jubilee Memorial Committee.

At the suggestion of the President Mr. TRIGGER'S motion, which was further on in the agenda, was taken at this point, Mr. TRIGGER accordingly moved "That the Council be asked to amalgamate their Bursary fund now accumulating, and amounting to about £309, to the Jubilee Memorial Fund, for the purpose of increasing the value of the Jubilee Memorial Scholarship."

Mr. ABSON seconded the motion, but it was resolved that the report of the Jubilee Committee should be read before the motion was discussed.

The SECRETARY accordingly read the report, which stated that the amount that would be available to enable the Council to carry out the object for which the fund was formed would be about £504, and it was hoped that the Council would consent to the transfer of the Bursary account, amounting to about £362, to the Jubilee fund. The report also stated that the committee had passed for the consideration of the Council the following resolutions: "That the prize be a post-graduate one and awarded on open competition"; "That no Bursary be awarded until the sum of £80 is available for distribution"; and "That a small committee be appointed to consider and report the conditions of award."

Mr. TRIGGER moved, and Mr. ABSON seconded, the adoption of the report.

On the suggestion of Mr. DOLLAR, Mr. TRIGGER agreed to add to his motion the words, "about to be handed over to the Council, making the motion read as follows: "That the Council be asked to amalgamate their Bursary fund, now accumulating and amounting to about £309, to the Jubilee Memorial Fund about to be handed over to the Council, for the purpose of increasing the value of the Jubilee Memorial Scholarship."

Professor MCFADYEAN moved as an amendment, "That the Council

declares its readiness to accept the Jubilee Memorial Fund in order to add it to the Council Bursary Fund."

Mr. HUNTING seconded the amendment, which was lost, five voting for and eleven against.

Mr. TRIGGER'S proposition was then put and agreed to, and Mr. MULVEY'S resolution for the adoption of the report was carried.

Steel Memorial Fund.

The SECRETARY read the report, which stated that the following resolution had been passed as a recommendation to the Council:—"That for the present two medals be presented only, and that a committee of selection be formed, who will report to the Council the names of those to whom the medals should be awarded."

On the motion of Mr. TRIGGER, seconded by Mr. DOLLAR, the report was adopted.

Publication Committee.

Mr. DOLLAR read the report, which was adopted.

Court of Examiners.

The SECRETARY read the report, which showed, with regard to the examinations in London, that in Class A, seven candidates were examined and five passed; in Class B, 14 were examined and 10 passed; in Class C (Oral), 16 were examined and 10 passed; and in Class C (Practical), 25 were examined and 16 passed. In Scotland, in Class A, 21 were examined and 13 passed; in Class B, 36 were examined and 22 passed; in Class C (Oral), 31 were examined and 21 passed; in Class C (Practical), 35 were examined and 22 passed.

On the motion of Mr. BARRETT, seconded by Mr. LAWSON, the report was adopted.

It was moved by Professor MCFADYEAN, seconded by Mr. MULVEY, and resolved:—"That the secretaries be instructed to supply, for the information of the Council in future, the names of the educational bodies granting certificates to students who present themselves for examination for the first time, to say what subjects are inscribed thereon, and the dates of passing the examinations."

At the request of Professor EDGAR, the certificate of a student was produced for the inspection of the Council, and on the motion of Professor EDGAR, seconded by Mr. MULVEY, it was resolved that the validity of the certificate in question should be enquired into.

Board of Agriculture.

The PRESIDENT presented the report of an interview he had had with the President of the Board of Agriculture, which, on the motion of Mr. DOLLAR, seconded by Mr. MASON, was adopted, and the thanks of the Council were accorded the President for his able representation.

After some discussion it was moved by Professor MCFADYEAN, seconded by Professor WILLIAMS, and agreed to, "That the President be asked to have another interview with Mr. Long to ask that gentleman if he could see his way to having the old title of the "Veterinary Department of the Board of Agriculture" restored.

Public Health (Scotland) Act.

The PRESIDENT drew the attention of the Council to the action of the Glasgow Corporation in opposing clause 71 of the Public Health (Scotland) (No. 2) Bill of 1896, and on the motion of Professor WILLIAMS, seconded by Mr. TRIGGER, it was resolved:—"That this Council enters its protest

against the adoption of this clause, as suggested by the Town Council of Glasgow, and that the President of the Local Government Board, the Highland Agricultural Society, the Town Council of the City of Edinburgh, as trustees of the Dick College, be also asked to enter their protest against the adoption of this clause."

It was also resolved, on the motion of Professor McFADYEAN, seconded by Professor PENBERTHY, that the President should be empowered to take whatever action seemed to him necessary together with any of the societies mentioned in the foregoing resolution.

Date of Examinations.

It was resolved that the Written Examinations should take place on the 10th July, and that the Oral Examinations should begin in Scotland on the following Tuesday.

Fellowship Examination.

The next Fellowship Examination was fixed for Wednesday, the 13th May.

Appointment of Examiner, Class "A," Anatomy.

Mr. J. Vaughan, F.R.C.VS., F.Z.S., was elected as examiner in the place of Veterinary-Captain Butler, retired.

Election of Officers.

Messrs. Woodger and Warner were appointed auditors for the ensuing year; Messrs. Butters, McOnie, Gale, Todd, Slocock, Sheriff, Rogerson, Spooner, Mahon, Singleton, Irving, Perryman, and Whiteman-Smith were nominated as scrutineers; and the President, Mr. Hunting, Mr. Wragg, Mr. Mulvey, Mr. Dollar, and Professor McFadyean were appointed as a Dinner Committee.

Grant for Annual Dinner.

A sum of £25 was granted towards the expense of the annual dinner.

Motion by Mr. Hunting.

Mr. HUNTING then moved the following resolution:—"That the resolution carried towards the end of the quarterly meeting of Council, held in January, to the effect that a previous resolution of Council concerning the educational certificates was 'in violation of the bye-laws,' be expunged from the minutes." He said that at the last meeting a handful of tired men voted that the deliberate conclusion arrived at at the previous meeting was in violation of bye-laws. If that sort of thing was allowed to go on, it would tend to disorderly conduct in the Council Chamber. To accuse a previous meeting of doing a thing in violation of the bye-laws, if allowed to go on, would lead to members accusing a previous meeting of worse things than that.

Mr. KIDD seconded the motion.

Mr. DOLLAR said that it was not the Council which was erring, but Mr. Hunting himself, and that whenever the Council in connection with the matter had gone off the rails, it had been either under Mr. Hunting's representation, or under his immediate direction.

The PRESIDENT said the question was whether the resolution, which was passed some three months ago, was a violation of the bye-laws?

Mr. DOLLAR traced the history of the matter from 1891, when the General Medical Council concluded to accept no divided certificate, down to the passing of the resolution which Mr. Hunting's motion sought to expunge. In the first instance, he said, the Council decided to accept no divided certificate; but Mr. Hunting wrote, producing the impression in Edinburgh, that divided

certificates would be accepted. The registration committee then again reversed the position of affairs; and now, for the fourth time, the question had again been raised, and Mr. Hunting was once more endeavouring to make the Council contradict itself, and run the risk of legal proceedings. He (Mr. Dollar) hoped the good sense of the Council would save them from such a ludicrous exhibition.

Professor McFADYEAN thought that no more important resolution had come before the Council for a long time. The rescinding of a resolution could only be justified by showing that that resolution was wrong; and the only justification for Mr. Hunting bringing forward his resolution would be his ability to show that the action which he and the Council originally took was strictly legal. He (Professor McFadyean) claimed that it was not legal; that it was highly illegal, inasmuch as it declared that a student possessing a certificate, or two certificates, setting forth that he had passed in specified subjects, but not all at one time, was eligible for examination. Mr. Hunting, when President of the College, had directed Mr. Hill to write a letter to Edinburgh, which said in effect, "I know of no regulation which says that all the subjects should be passed at once," and it was communicated privately to the schools in Edinburgh, and they immediately began to act upon it, and admit students who presented divided certificates.

Prof. WILLIAMS: No, no!

Professor McFADYEAN, continuing, said that in London all the time Mr. Hill was refusing to accept such certificates and he continued to refuse to accept them to this day. At the time when the matter cropped up the Council were governed by a bye-law which said "A student must produce a certificate acceptable to the General Medical Council": and he maintained that the regulations of the General Medical Council were perfectly explicit, and that all subjects had to be passed at one time. In his view it was not a case of any ambiguity in the bye-laws. It was simply a covert attempt to lower the standard of general education.

Professor WILLIAMS said that at the time he knew nothing at all about the letter alleged to have been written by Mr. Hunting, that no matter how or when the certificates were obtained students were eligible for examination. He went by the instructions of the Council, and admitted his students on the understanding that if they possessed educational certificates, although they might have taken three or four sittings to obtain it, they were eligible for examination, and until the meeting of the Council which opposed his arrangement he knew nothing of the letter sent by Mr. Hunting, as President, to Mr. Rutherford, nor did he know one single word about the letter sent to Mr. Mathew until afterwards. He had full faith that everything was arranged that men were to pass a certain standard without any restriction as to the time of passing. He opened his college and the students entered on that understanding. There was a great deal more underneath the question than appeared on the surface. It was supposed that the smaller schools, having no one at the back of them, would go to the wall. He thought in all justice to men who were financially affected to the extent of their fortune in conducting schools of veterinary science, that the Council should not pass a resolution making it an impossibility. To think that a man who was to become a veterinary surgeon should pass that high examination at one sitting was beyond all reason and common sense. He should therefore vote for Mr. Hunting's motion.

Professor DEWAR asked, if the resolution of Mr. Hunting was not passed, in what position would it leave those students who had already entered the veterinary college and those students at the last examination, who were sitting in class "A," and who had entered with divided certificates? Was it going to be retrospective so far as they were concerned. ("No, no.")

The PRESIDENT said the resolution which was carried some time ago was simply an expression of opinion of the Council; there was no alteration of the bye-laws.

Mr. Hunting's motion was then put and carried, 12 voting for it, and 10 against.

Professor MCFADYEAN said the matter was a very serious one, and pointed out that there did not stand in the minutes any such resolution as that quoted.

Motion by Mr. Mulvey.

Mr. MULVEY asked and obtained the permission of the Council to withdraw the following resolution which stood in his name, with a view to amendment:—"That there shall not be more than three examinations held during the year—one in March, April, or May, one in July, and one in December or January. An examination shall not be held in a class unless 18 candidates at least in such class are presented for examination in the country where such examination is to be held."

At the conclusion of the ordinary meeting of the Council a special meeting was held to consider certain resolutions set down by Professors Penberthy, Edgar, and Shave.

Motion by Professor Penberthy.

Professor PENBERTHY moved the following resolution:—

"That at least twenty-eight days prior to the date fixed for the examination every candidate for the Fellowship Degree shall forward his thesis to the Secretary, who shall then forward all theses received to the Chairman of the Examining Board, or to such of the Examiners as he may nominate."

Mr. HUNTING seconded the motion, which was agreed to.

Motion by Professor Edgar.

Professor EDGAR then moved the following motion:—

"Students who enter the veterinary schools shall, prior to their first Professional Examination by the R.C.V.S., produce a certificate entitling the holder to be registered as a medical student."

He said the importance of having clearly-defined statements upon which the Council were to act from time to time had been most painfully and clearly manifested during the recent meeting. That they should be compelled to rescind at one meeting that which they deliberately had passed at another, was necessarily causing them to look in the eyes of the profession that which they had been described as—a set of meddlers and muddlers. His object in bringing forward the motion was to make the bye-law sufficiently clear. He merely asked the Council to give effect to what had been the intention of the Council during the last five years, and what the majority of the profession believed to have been the intention of the Council, in spite of the dust which had been thrown in their eyes. There had been an attempt to show that the veterinary student need not be so well educated as the medical student, and to show that the whole duty of a veterinary surgeon was to fire horses, deliver cows, and give colic drenches. That had been seriously contended by the Editor of the VETERINARY JOURNAL.

Professor WILLIAMS: I deny every word you say.

Professor EDGAR said they were asked to believe that an average lad must go to school until he was 18 years of age before he could pass the lowest standard which the medical profession demanded of its students. He maintained that any average lad of 16 was perfectly able to pass the maximum standard demanded from medical students. He simply asked the Council to put an average examination on veterinary students. He asked the Council to

vote as deliberately as they could on the matter, and to remember that their vote to-day exhibited not to the few tired men who were in the council chamber, not to their little profession, but to the public at large, their estimate of the value of the preliminary education upon which a professional education was to be built, and if they nullified it by their vote they would say at once that they believed the veterinary student was an inferior creature, from an educational standard, to the medical student.

Professor PENBERTHY seconded the motion.

Mr. BARRETT said it was an important resolution, and, in view of the hour, he thought it would be better if the meeting was adjourned.

Professor WILLIAMS said that the assertions of Professor Edgar had certainly taken his breath away from him, because they were entirely new to him. He never had Professor Edgar in his mind when he wrote the article mentioned, and he never stated that he wished the standard of the educational examination to be lowered. What he did say was that he supported and maintained the standard of examination, and that he thought it unfair that the examination should be passed at one and the same time. He proposed a direct negative.

Professor MCFADYEAN said it seemed to him that the members of the Council on that question might fall into three categories. There were some who were no doubt in favour of it on the ground that education was not detrimental to the veterinary student, and on the ground that if the Council adopted the higher standard, they were quite likely to get enough students to recruit the profession. On the other hand, there were some who probably had no very strong feeling one way or the other. There were others—and Professor Williams was in the category—who would be injured financially by the adherence to the high standard of education. There was another class who had already said that they were in favour of adhering to the higher standard of examination, but who had said that the bye-laws, as they at present existed, were ambiguous. Mr. Hunting and Mr. Barrett were in that class. The question was by far the most important one that had come before the Council for the last four years. The whole question had already been pronounced upon by the profession four or five years ago. He thought the profession deserved to be consulted. There was only one way of doing that, and that was to make it a test question at the next election, and the way to do that was for those of them who were in favour of a higher standard to resign their seats on the Council and to stand again.

Professor DEWAR proposed that the motion should be adjourned to the July meeting.

Mr. BARRETT seconded the proposition, which was supported by Professor PRITCHARD, and carried, 13 voting for and 9 against.

The following notice of motion standing in Professor's Shave's name—"That stable management be struck out of the second or 'B' examination"—was also adjourned to the July meeting.

Professor MCFADYEAN: I beg to tender the resignation of my seat upon this Council.

Professor EDGAR: I beg to do the same.

Mr. DOLLAR: I shall also resign.

Mr. MULVEY: I shall do the same.

Mr. HARTLEY: I beg to do so also.

Notice of Motion by Professor Dewar.

Professor DEWAR gave notice of his intention to move in due course—"That meat inspection be struck out of the fourth or 'D' examination."

The Council then adjourned.

ROYAL COLLEGE OF VETERINARY SURGEONS.

The Examinations in London.

THE Written Examination in the various classes was held on Tuesday, March 24th, at the Examination Hall of the Royal College of Physicians and Surgeons, Victoria Embankment, S.W. The Oral Examinations at a meeting of the Court of Examiners, 10, Red Lion Square, W.C., on the 26th, and the Practical portion of the Final Examination and Class B at the Royal Veterinary College, Camden Town, on and between the 26th and 28th.

The following students passed their final examination :—

Mr. W. Denington, Shepherd's Bush, W.
„ A. H. Berry, Streatham Hill.
„ H. Williams, Lincoln.
„ H. A. Lenox Conyngham, Moneymore, Ireland.
„ R. Spooner Hart, Calcutta.
„ J. Stewart Wood, Walton-on-Thames.
„ A. Doyle Bingham, Poona, India.
„ J. A. H. Engel, Liverpool.
„ Harry H. Worrow, Shadwell, E.
„ A. J. Curtis, Bideford, N. Devon.
„ Harry Edie, Camden Road, N.W.
„ J. Hughes.
„ W. James Heley, Leighton Buzzard.
„ Stanley W. Jones, Dartford, Kent.
„ R. C. Mathews.
„ J. L. Webb, Bishop's Stortford.

The following students passed their second examination :—

Mr. A. F. Deacon.
„ C. D. Stewart.
„ A. N. Swanston.
„ W. H. Anderson.
„ R. W. Carless.
Mr. J. Chalmers.
„ T. Elliott.
„ J. W. Oakley.
„ A. Hudson.
„ E. T. Goodall.

The following students passed their first examination :—

Mr. D. S. Dickman..
„ G. S. McNabœ.
Mr. R. B. Mearman.
„ J. McWharrie.
Mr. J. H. Poles.

ARTHUR W. HILL, *Secretary.*

The Examinations in Scotland.

AT meetings of the Board of Examiners held on March 24th for the written examination, and on and between March 27th and April 1st for the oral and practical examination, the following gentlemen passed their final examination and having registered were admitted Members of the Royal College of Veterinary Surgeons :—

GLASGOW COLLEGE.

Mr. J. McLean, Largs.
„ J. Brown, Airdrie.
„ R. McDonnell, Ballycastle, Antrim.
„ M. E. White, Glasgow.
„ J. Watson, Shettlestone.

DICK COLLEGE.

Mr. J. Caldwell, Largs.
„ P. J. Harris, London.
„ W. H. Nicol, Davidson Mains, Edinburgh.
„ D. Reid, Auchtermuchty, Fife.
„ W. T. Casewell, Newport, Salop.
„ C. J. Clifford, Dunkalk.
„ R. Henderson, Carlisle.
„ A. C. Smart, Edinburgh.
„ J. Walker, Melbourne, Australia.
„ R. F. Watson, Lanark.

NEW COLLEGE.

Mr. J. Bibby, Holmrock, Carlisle, Cumberland.
„ J. B. Cowt, Manchester.
„ T. Dickinson, Aspatria.
„ J. Lyons, Benderden, Antrim.
„ W. Russell, Cork.
„ W. Rostron, Manchester.
„ R. J. Munnaise, Killmalloch, Limerick.

The following students passed their second examination :—

GLASGOW COLLEGE.

Mr. W. Burke.
†„ J. J. Smith.
„ P. McKinlay.
Mr. J. W. Conchie.
„ R. H. Johnstone.
„ J. C. Erskine.

DICK COLLEGE.

Mr. J. G. Blackwood.
„ H. J. Bradbury.
„ C. Farrar.
„ A. Hodder.
„ T. D. Lambert.
* „ R. H. Lambert.
Mr. A. McGown.
„ E. C. Orton,
„ W. J. Foley.
„ J. L. Frood.
„ T. Loughran.
„ J. O. Brien.

NEW COLLEGE.

Mr. H. Briggs.
„ H. G. Brittain.
Mr. G. Barras.
„ J. C. Blake.

The following students passed their First Examination :—

GLASGOW COLLEGE.

Mr. D. Frew.
Mr. A. McDowell.

DICK COLLEGE.

Mr. R. Burt.
„ A. Lauder.
Mr. W. J. Lewis.
* „ F. Leech.

NEW COLLEGE.

Mr. T. C. Howatson.
„ A. Scotson.
„ H. Whipp.
„ E. J. Finucane.
Mr. C. H. Harrison.
„ T. R. Weedall.
„ S. Robson.

Marked thus * passed with second honours.
„ „ † „ „ first honours.

R. RUTHERFORD, F.R.C.V.S., *Secretary to Board of Examiners.*

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE Annual Meeting took place at the Grand Hotel, Birmingham, on the afternoon of Friday, February 14th, 1896. The President (Mr. G. Wartnaby, of Burton-on-Trent) occupied the chair, and there were also present: Professor Penberthy, Messrs. Gibson, Blakeway, Stanley, Malcolm, Wilson, Birmingham; Crowhurst, Leamington; Green, Dudley; Carless, Stafford; Burchnall, Loughborough; Barnes, Cheadle; Wiggins, Simpkins, Market Harboro'; Blunt, Lutterworth; Smith, Tunstall; Beddard, J. Cartwright, Wolverhampton; Paley, Prickett, Walsall; Barling, Ross; Whyte, Tenbury; Olver, Tamworth; Coe, Stoke-upon-Trent; Slipper, Tamworth; Kidd, Melton Mowbray; Taylor, Stourbridge; Green, Alfreton; Gooch, Stamford; Trigger, Newcastle; Collett, West Bromwich; Barrett, Nuneaton; and H. J. Dawes (hon. sec.). Visitors: Messrs. Hills, Conyngham, Walker, Clay, and Vet.-Captain Marriott.

Election of Officers.

The PRESIDENT said he had very great pleasure in proposing as his successor in the chair, Mr. Gooch. The latter had been one of the most regular attenders at the meetings of the Association, and he was a man who had at heart the best interests of the profession. If Mr. Gooch were elected, he was sure he would fill the office both with credit to himself and satisfaction to his fellow members.

Mr. STANLEY seconded in brief but complimentary terms, and the motion was carried unanimously.

Mr. GOOCH returned thanks for the distinction conferred upon him. He was proud to receive such a high mark of their confidence and esteem. He was not going to deny that he had striven for it, because he thought it was the duty as well as the privilege of every man to try to rise to the foremost position. It would be impossible for him to forget the responsibility attaching to the office of President of such an important Association as this, but he felt sure his duties would be materially lightened by the support which the occupant of the chair had always been able to command from the members. The Midland Association, both numerically and financially, was one of the most influential bodies in the whole profession, and to be at the head of such an organization was an honour much coveted, and one which, now that he had achieved it, he should endeavour to uphold.

Vice-Presidents.

In addition to the retiring President, who for one year is Vice-President *ex officio*, it became necessary to elect two officers.

Mr. STANLEY proposed, and Mr. SMITH seconded, Mr. A. Green.

Mr. GOOCH proposed, and Mr. TRIGGER seconded, Mr. Gibson.

No other propositions being forthcoming, Messrs. Green and Gibson were declared duly elected, and both gentlemen briefly acknowledged the compliment.

Treasurer.

Mr. MALCOLM proposed that Mr. J. Blakeway be re-elected hon. treasurer of the Association. He said they had got a good man in Mr. Blakeway, whom they ought not to part with.

Mr. BARNES seconded the resolution, which was carried.

Secretary.

Mr. GOOCH said he had great pleasure in proposing that Mr. H. J. Dawes be re-elected hon. sec. The work of the past year had found out what kind of man he was. There had been several extra duties devolving upon the Hon.

Sec. during the past twelve months, all of which he had carried out with the utmost satisfaction.

The PRESIDENT said he wished to have the pleasure of seconding the resolution, as it gave him an opportunity of thanking Mr. Dawes for the very kind and able way in which he had assisted him during the past year. He could assure them that his duties as President had been very easy and pleasant in consequence of Mr. Dawes' assistance, and whilst tendering to him his personal thanks, he could assure the Association that they possessed a Secretary of exceptional skill and ability.

Mr. WIGGINS having supported the resolution, it was carried unanimously.

Mr. DAWES thanked them very much for having re-elected him as Hon. Sec. The position was no light one, but if his efforts met with the approval of the Association he could assure them he was amply rewarded.

Grunting in Horses.

The HON. SEC. read the circular letter from the Lincolnshire V.M.A.

Mr. TRIGGER thought the subject offered sufficient scope for discussion at a future meeting, when there was less work to do than on the present occasion. He suggested that it be placed on the agenda at the next meeting, and he concluded by moving a resolution to that effect.

Mr. GOOCH said that as the next President of the Association, he should like to second that proposition. He understood that it was the intention of the Association to hold the next meeting on the Lincolnshire side of the Midlands, and that being so, he would do his utmost to induce Mr. Howse, of Lincoln, to introduce the subject.

Mr. STANLEY agreed that it was the most important question that had been brought under their notice for many years, and it was not thoroughly understood by professional men at the present time. No matter what they learnt at college, they found things a great deal different in practice.

The PRESIDENT said he was quite with them in thinking that the matter had better be deferred till the next meeting.

The resolution was then carried.

Professor PENBERTHY now delivered an address on the "Joint Diseases in Young Animals."

He said he was present in compliance with a promise made to the President some considerable time ago. He had experienced considerable difficulty in choice of a subject, and applied to a member of the Association, who suggested that he should occupy their time for a short while on the subject of joint diseases in young animals. He might say that it was always a pleasure to be associated with their president (Mr. Wartnaby), and it was equally a pleasure to appear before his colleagues of the Midland Counties Veterinary Medical Association. He regretted not having been able to prepare a paper as he would liked to have done on a subject which he considered an extremely important one. It was one which gave the profession a good deal of material for thought, and often a good deal of disappointment in practice. He was encouraged to undertake the task in the hope of getting the benefit of their experiences of the conditions he was about to refer to. Reference to the names that had been given to the joint diseases of young animals would be enough to show what doubt and error existed in the minds of those who had to deal with such affections under the title which had been given to his address. He could not very well attempt to deal with one disease alone, though he proposed to dwell especially on one form of joint disease. They knew that in young animals, the joints, for some reasons not very well explained, were specially liable to diseases of an infective character, and also diseases associated with development. They knew that until adult life,

developmental activity was manifest, particularly in the bones and at the ends of the long round bones.

He proceeded to put the various diseases under the following headings:—

1st. Rickets. 2nd. Tuberculosis.
3rd. Strangles. 4th. Pyæmia.

He had left the more important one until last because he thought that to country practitioners it afforded the most trouble, and, consequently, the greatest interest. Rickets was a disease which more commonly affected the bones of dogs and pigs, and less commonly foals, calves, and lambs. It was a disease which never affected adult animals, and was not usually observable until some months after birth. Taking it generally, there was an increase in the cartilage basis, which was improperly or incompletely ossified. There were the minute changes that went on in the bone, but with those he did not propose to deal on that occasion. This was a disease differentiate from the others by being non-febrile, and by which the constitution of the animal was little affected. The bone tended to bend and became softer, and enlargements of a non-painful character manifested themselves at the ends of the bone. They found that particularly in puppies and young pigs, and in such cases the condition was probably due to some hygienic defect, especially the lack of sunlight, sometimes the lack of food, or at other times, some maltreatment of the dam during utero gestation. He mentioned rickets particularly in order that they might be able to differentiate between it and the other diseases to which he wished to draw their attention more in detail.

Tuberculosis affecting the joints was perhaps more commonly noticed in the pig than in other animals, though from some statistics he gathered that *post-mortem* examinations proved in about one per cent. of the cases of disease found in young cattle the joints were tuberculous. They rarely found tuberculous changes in the joints of the limbs of young horses. In every case of tubercular arthritis he had met with, he had been able to discover that the foals had been largely fed with cow's milk. Animals suffering from this disease show no signs of it until they are of some age, generally from six months to three years, but it would be a rare case with which he had not yet met: consequently the consideration of the clinical features of that condition need not occupy any more time.

A disease of the joints which there was good reason to suppose was due to the virus of strangles, he thought had been largely overlooked. Experimental pathologists had by a use of the isolated contagion of strangles produced a condition which explained a good many of the cases which were called rheumatic arthritis in young stock. It was known pretty generally that when the virus of strangles entered a young body, it was not necessary, to produce death, that there should be appreciable pus formation or special disturbance of the respiratory system. It was sometimes found that animals died of septicæmia very suddenly. The only thing to be observed was a rising of temperature and a swelling of the joints. This occurred in animals very young and more frequently in animals from twelve months to two years old. His own experience was that they were bound to include strangles as one cause of non-suppurative joint disease in young animals.

There was a word in the medical dictionary to which they often had recourse, and that word was "rheumatic." It was an extremely convenient word and sometimes covered a considerable want of knowledge. The term rheumatic had probably been applied to this form of joint disease from the fact that when one joint was affected, other joints were liable to be, and then they said it was a rheumatic swelling. The virus of strangles has been found in the blood from animals which had been suffering from the so-called *rheumatic arthritis*,, and at the *post-mortem* examination he had never found any evidence of chronic rheumatism. He did not deny that the lower

animals suffered from rheumatism, although he had heard a well-known authority say they did not. He himself had been disposed to believe that young pigs were especially liable to the infection. In those cases several of the litter, from six weeks to four months old were suddenly noticed to be indisposed to walk; a hot and painful swelling at the joints, which frequently yielded to treatment such as would be adopted in rheumatism in the human subject.

But the disease to which he would draw particular attention was a historic disease—specific arthritis, pyæmia neonatorum, omphalo-thrombo-phlebitis, joint ill, or navel ill. The term pyæmic umbilical infection was now frequently used to indicate the affection. This disease, which most commonly affected foals and lambs, and less frequently the other domesticated animals, although no domesticated animal was free, when it did appear in a place generally had an abiding influence there; indeed, some places were scarcely ever free from the condition. This special disease was one that was particularly noticed in the higher-bred and more valuable animals. Perhaps one may be inclined to think that the reason for that was that they heard more about the higher-class animals, but he did not think that covered all the ground. He believed there were causes in existence which rendered high bred animals more liable, one being the extra attention that was given them, and among others—the common foaling box or lambing pen, and the reception of mares for services and parturition. So far as he could gather, it was not only more noticed in high bred stock, but it was in reality more common among them. This disease has several points which are interesting. In the first place it is generally said to be hereditary, that is, it is conveyed from the parent to the progeny. He was going to say he had never seen any reason for such a view; but he would rather say he had not met with satisfactory proof of this quality. Before he dealt with views he did not coincide with, he should mention what he regarded as the true pathology of this so-called umbilical infection. He believed it was due to the entrance of a microbe, which most commonly took place at the umbilicus, but possibly through the respiratory or alimentary passages, or wounds. The manifestations of the disease were generally appreciable before the thirtieth day of life. He had gone over a large number of cases which he had kept in record, and it was in all appreciable before the twenty-first day after birth; in most before the seventh day. There was a considerable proportion of cases which showed, perhaps, no purulent lesions, no manifestation—that was, it was not recognised, and months might elapse before their attention was drawn to it. The virus which produced that condition he did not think had been satisfactorily demonstrated. He did not think they could tell whether it was a micrococcus or a small bacillus. Several Continental writers have stated that it was a micrococcus which they had found in every case. He might add that in England they had not been able to isolate that microbe, but they had found very short bacilli, which had been cultivated and had produced symptoms of the disease on being injected into the blood. A knowledge of the life-history of the organism would help them materially. He himself believed it was one which lived outside the body a long time, but one must speak of these things with reserve until the life-history was demonstrated. He thought the circumstances in connection with the disease were against it being an ordinary organism, because all animals were born with open navels, which generally got in the dirt, where there were plenty of organisms to set up suppuration. The mode of entry of those organisms could generally be demonstrated to be at the umbilicus. They entered very soon after birth, and there set up a suppurative process, and according to the activity of their growth, so would be the manifestations of the disease. If they grew very rapidly, there was plenty of chance of their being disseminated by the blood stream, and

then the special developmental activity of the joints seemed to determine the joints as the situation most suitable for the growth of those micro-organisms. He was not sure that those micro-organisms might not enter by another channel. Consequently, in considering the case of this particular joint-disease—and he thought the same applied to lambs as to foals—he had come to the conclusion that it was produced by a micro-organism, which most commonly entered at the navel, and among the predisposing causes he would enumerate anything which tended to retard the healthy closing of the navel. Beyond that he did not think it depended on the dam at all—of course, allowing for her bringing disease-germs from one part to the other, and conveying them year by year to the newly-born animal. In more than one case, or rather a series of cases, which he had investigated, he had found that abortion in mares was very closely associated with this disease in the foal. The great majority of cases of navel ill occurred in animals which were born just a little before their time. They could quite conceive how in an animal which had not been long enough in the womb for its development to be brought to the proper pitch, that the navel would remain open and be unhealthy. Beyond that, however—which, of course, would prevent the umbilicus closing at the proper time—beyond this he had not discovered any part attributable to the parent. He knew his opinion was not generally received, and he was hoping to hear further evidence, either on one side or the other, because he kept an open mind in such matters. It was generally held that males were very much more subject to the infection than females, which was supposed to be due to their mode of urinating, which kept open the umbilicus longer, or, at any rate, rendered it more unhealthy, and better soil for the growth of micro-organism and the formation of pus.

The disease was sufficiently familiar to them to allow him to pass over a description of the symptoms. They had suppurative inflammation, in a good many cases of the joints, but it was not at all necessary that these changes should go on. A case occurred where swelling of the joints lasted, hung fire, got worse, got better, and apparent recovery took place. But if the swelling lasted verv long, the chances were that some of the structure of the womb muscles were so affected that the animals were comparatively worthless. The treatment was to be divided into two parts—the curative and the preventive. There was much more hope for the preventive treatment than for the curative, in which they would no doubt agree with him, although he did not for a moment lay down that in this infection treatment was of no avail. He had, from some experience, a good deal of faith in potassium iodide. They had foals from three weeks to six months to deal with, and they knew how difficult it was to administer sufficient medicine to the very young. They should begin at the foundation and destroy the virus at the navel if possible. The local applications to the joints, in his opinion, called for comparatively little attention. They must, in practice, do something with the swelling of the joints, and that which interfered less with the joint, in his opinion, was best. He had tried the application of iodine solution after washing in soda, but he had never done that without giving the animal potassium iodide internally.

The preventive treatment was, however, in his opinion, the most hopeful. He had two letters in his pocket concerning a very serious outbreak with which he had been connected during the past two years, and in those studs there had been no cases last year. There was nothing very particular in the treatment he was going to suggest, except as regarded the thoroughness with which the details ought to be carried out. They recognised that it was a contagious disease, and they should begin by removing the chances of its existence. One most inevitable cause of maintaining the disease was the foal-box. By bringing the mares to the one box to foal every time everything

became contaminated. The mares should foal in their own boxes, which should be disinfected as much as possible. He strongly believed in the free use of disinfectants—of course, he was speaking of valuable animals, where expense was a secondary consideration. Bring into use some non-irritant solution before the young animal is born. He did not say inject the vagina, though that might be a good thing, but wash all the back parts. Then the plan which had been carried out in those cases where signs of the disease had occurred, had been to tie the umbilicus as soon as the foal was born. Before the cord was broken, if possible, disinfect the ligature, tie it round the cord, and then cut the cord between the foal and the dam. Whether in the case of a foal or a lamb, the part should be thoroughly well disinfected with carbolic acid, or something which does not irritate, and in the case of valuable animals, something should be used to cover the part for a day or two. The dying parts should be dressed as often as possible—once a day was not too often—with some strong antiseptic, such as carbolic acid. He did not claim this as his own idea, although it had been practised with conspicuous success. The dusting on of some dry powder, such as sulphate of zinc and flour, or a little borax and flour, was what he generally advised, and it had been followed by extremely good results if the parts had been well washed. The carcases of all foals dying should be immediately destroyed—burnt if possible—and after the foaling season was over there should be a thorough disinfection of the whole of the breeding place. In the case of lambs, he thought the shepherd had specially to be attended to. It was essentially to get a new fold and turn all the fresh animals into the fold, and bring animals which had been in the old fold back.

In conclusion, he expressed the hope that his remarks would afford scope for ample discussion, and that one and all would benefit thereby.

The PRESIDENT said the matter was one which affected them all very deeply, and more especially the country practitioner. It was a disease upon which they all had a good deal to learn, and he was extremely glad to find that Professor Penberthy had chosen the subject for his address that afternoon. He invited the members to discuss the question.

Mr. TRIGGER said they could not help recognising how much they were indebted to Professor Penberthy for coming down to the Midlands to lay before them such an interesting matter. He did not know whether they, as country practitioners, were prepared to controvert anything which had fallen from the lips of the professor. At the same time they no doubt experienced a difficulty in reconciling the scientific facts with the actual facts which existed in their practice. The infections which had been alluded to were such as he had had painful experience of in past years, because it was always painful to a man, who had his heart in his profession, and who found himself coping with cases which terminated disastrously. He did not think they need consider much the question of rickets in dogs and pigs. He thought tuberculosis of the joints was rare in horses. He was struck with the professor's observations about not finding any trace of tuberculosis in the dam. True, but in his experience one or two bad outbreaks of tuberculosis in cattle and pigs were to be traced to the male parent distinctly. They sometimes had to look a little further than the dams. With regard to the navel ill, as it was called, he recognised its contagious character. An important point in his mind was that the disease was seldom observed in the case of animals which were foaled out at grass. Let a mare be in a perfect state of nature, and they had little joint evil. He thought the professor had underrated the importance of heredity, which, in the speaker's opinion, played a more important part than was given credit for.

Mr. CARLESS said he had learnt a great deal from the professor's address. He was in accord with the professor when he suggested that strangles was a

frequent cause of it. He had seen cases were a foal had died, or was taken ill, in less than 21 days; he had seen it happen in 24 hours. He quite agreed with the professor as to the importance of using disinfectants freely immediately after birth.

Mr. OLVER, after first thanking Professor Penberthy for his address, said he had seen a case of rickets in a foal, or, at any rate, an enlargement of the joints in certain parts which much resembled rickets. He understood the Professor to say that rheumatics was rarely or never seen in foals.

Professor PENBERTHY: No, we have no trace of it in foals.

Mr. OLVER (continuing), said he had observed a case where the animals had been turned out in low river pastures, and on damp grass.

The PRESIDENT said he felt this was far too important a subject to be hurried over, as they seemed compelled to hurry over it that afternoon, and with Professor Penberthy's permission he should ask them to adjourn the discussion until the next meeting, when they would have more time to go into it. He begged to thank the Professor very much indeed for coming amongst them, and he moved a resolution to the effect that the discussion be adjourned.

The HON. SECRETARY seconded the motion, which was carried.

Next Place of Meeting.

On the motion of the HON. SECRETARY, seconded by Mr. J. R. GREEN, it was resolved to hold the next meeting of the Association at Nottingham.

Votes of Thanks.

Mr. A. GREEN proposed a vote of thanks to Professor Penberthy for his attendance and services.

Mr. CROWHURST seconded the motion, which was heartily carried.

Professor PENBERTHY, in response, thanked the members for the patient hearing they had accorded him, and he was looking forward with considerable interest to the next meeting, when the discussion would be resumed.

Mr. STANLEY proposed a vote of thanks to the retiring President (Mr. Wartnaby) and the other officers of the Association for their services during the past year. There was no time for any lengthened remarks, but he felt sure the proposition would meet with a cordial acceptance.

Mr. GOOCH seconded, and the motion was carried unanimously.

The PRESIDENT briefly responded, and in turn thanked the members for the generous support which they had at all times extended to him.

Convivial.

The annual banquet was afterwards held, Mr. Wartnaby again presiding. A toast-list appropriate to the occasion was gone through, and the proceedings, though necessarily brief, were thoroughly enjoyable.

H. J. DAWES, *Hon. Sec.*

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE annual meeting was held at the Royal Hotel, Southampton, on Tuesday, April 2nd, the members present being T. B. Goodall (president), Messrs. J. W. Barford, J. T. King, J. T. Burden, E. W. Baker, C. Carter, G. J. Gould, J. F. Simpson, (President R.C.V.S.), and C. Pack (hon. sec.)

Apologies were read from several members and friends regretting their nability to attend.

Morbid Specimens.

The PRESIDENT showed the lower jaw of a mare with irregular and loose teeth. The animal was eleven years of age and had been in poor condition

since about three years of age. He had advised her being destroyed, and had secured the head. Some of the teeth were quite loose, and the alveoli also contained ingesta which had apparently kept up a continual irritation of the part. He also exhibited the lower jaw of a 30-year-old horse in which the teeth appeared to have been worn almost entirely through the crown, thus showing that a set of teeth under ordinary conditions would about last the lifetime of a horse, providing he was not carried off by disease, and the teeth themselves remained in a sound condition.

The minutes of the last meeting having been read and signed, the meeting proceeded to the

Election of Officers for the Ensuing Year.

On the proposition of Mr. E. W. BAKER, seconded by Mr. J. W. BARFORD, Mr. J. T. KING was unanimously elected president.

Mr. KING having thanked the members for the honour paid him, Mr. Goodall vacated the chair in favour of Mr. King.

The vice-presidents elected were Messrs. J. F. Simpson, J. W. Barford, E. W. Baker, and C. Carter.

Mr. Pack was re-elected to the offices of secretary and treasurer.

The Exemption of Veterinary Surgeons from Serving upon Juries.

A letter was read from the Secretary of the R.C.V.S. containing the reply of the Council to a resolution made at the last meeting of the Association asking the Council to exert their influence to obtain the exemption of veterinary surgeons from serving upon juries, and to take steps for the revision of the scale of fees paid to veterinary surgeons when giving evidence in criminal cases, so that they may be placed on a similar footing to solicitors and medical men.

The letter was to the effect that the Council could not see their way to do anything in the matter, and suggested that the better way would be to appeal to the local parliamentary representatives.

After discussing the letter it was resolved that the Secretary again write, "That the Association expresses disappointment at the answer received and desires the Council to again give the whole matter their earnest consideration."

Grunting in Horses.

The circular letter from the Lincolnshire Veterinary Medical Association, asking for a general opinion of the members on the above subject, was now read, and after most of the members present had expressed their opinion of the matter, it was decided that a reply be sent in the following terms:—"That, in the opinion of this meeting, 'grunting' in horses does not necessarily constitute unsoundness."

Support to candidates for Council was the next item on the agenda, and it was decided that the hearty support of the members should be accorded Mr. Simpson at the forthcoming election of Councilmen, and that the Secretary write the members of the Association, not present that day, informing them of this.

Mr. E. W. BAKER, M.R.C.V.S., then read his paper on "Iodine and its Compounds."

Mr. President and Gentlemen,—At the last meeting of the Southern Counties Veterinary Medical Society, the advisability of continuing to hold our meetings as before, or amalgamating with the Royal Counties Veterinary Medical Society was discussed. Feeling that it was not advisable to let our own Society die an unnatural death, I suggested each member in turn should introduce a subject for discussion, and promised I would be the first to do so. Such is my excuse for bringing forward my paper to-day, and in doing so I beg you to offer original remarks, and thus

make up for my shortcomings in simply robbing others' brains in order to bring before your notice "Iodine and its Compounds."

Iodine belongs to a group of non-metallic elements, and is either obtained from the mineral iodides and iodates, or from kelp—the ashes of seaweed. Like chlorine, iodine possesses powerful affinities; it combines readily with many organic and inorganic substances, and is a powerful disinfectant, antiseptic and deodorant. Dr. Lauder Brunton states the most destructive substances to bacteria are corrosive sublimate, chlorine, bromine, and iodine.

Iodine, when applied externally, is a powerful irritant and vesicant; it is seldom used directly as a caustic, but concentrated solutions or liniment are used as stimulants and resolvents in chronic inflammation of joints, synovitis periostitis, bursal enlargements, strains of tendons, thickening of periosteum, bony enlargements (exostoses); scrofulous and other tumours, and in induration of the udder. It is likewise a powerful parasiticide, especially efficacious in both tinea tonsurans and tinea circinata (the two forms of ringworm), in the treatment of which Mr. Carter recommends the following formula:—

Iodine	2 drams.
Light oil of wood tar	1 ounce.

In the human subject painting the affected and circumjacent skin with a solution of iodine is strongly recommended to prevent the extension of erysipelas. Iodine solution is injected into joints affected with white swelling, into the cavity of the pleura in empyæma and into other internal cavities without producing ill results, unless caries or necrosis of the bones be present, but whether these lines of treatment will ever be likely to be adopted in veterinary practice appears doubtful.

In chronic pleurisy in the human subject after evacuation, iodine injections remove the great fœtor often present from the decomposition of pus.

Solution of iodine injected into the cavities of abscesses or serous cysts, glandular enlargements, etc., is beneficial by retarding their development and assisting their dispersion.

Inhalations of iodine are strongly advised by medical writers in bronchial catarrh and other affections of the lungs and air passages, and might perhaps be more largely applied in the treatment of the lower animals.

Iodine, when applied externally, is absorbed into the blood partly by the skin and partly by the air of respiration in the form of vapour. In application to glandular enlargements, the absorption is stated to be often more effectual when applied in a zone around instead of directly over the swelling. As a stimulant in sore throat, and counter-irritant in pleurisy, it may be applied as a tincture or aqueous solution, being especially efficacious in arresting the formation of an exudate, and hastening the removal when outpoured.

Solutions of iodine mixed with or alternated with tar, sulphur, and the mercurials, prove useful in eczema, psoriasis, and the various forms of skin trouble produced by the presence of parasites—including, as before stated, ringworm. In the treatment of indolent ulcers, and for the stimulation and deodorisation of unhealthy and malignant wounds, either an ointment or dilute tincture is of the utmost service.

A useful antiseptic dressing for wounds may be made of—

Iodine	10 grs.
Iodide of potash	10 grs.
Water	1 oz.

A useful mange dressing of—

Iodine	½ oz.
Iodide of potash	2 drms.
Tar	1 oz.
Lard	8 oz.

Iodine is an expensive but very effectual deodoriser and disinfectant,

decomposing harmful organic compounds chiefly by uniting with their hydrogen, and also destroying the lower forms of vegetable and animal life. It is said to be contra-indciated in high fever, but this can hardly apply invariably, or so much success would not attend its administration in purpura. Hertwig states in most affections of the eye it does more harm than good. The ointments of the iodide of lead and mercury are considered of much value in the treatment of enlarged lymphatic glands, etc., their chief effect being stimulation, but undoubtedly a certain amount of the iodine is absorbed and acts specifically.

Large doses of iodine are irritant and corrosive. Vapour insufficiently diluted causes irritation, cough, and spasm of the glottis. Medicinal doses stimulate secreting glands and quicken their capillary circulation and metamorphosis, hence are alterative and deobstruent. Iodine is especially beneficial in the treatment of diabetes insipidus in horses, allaying the thirst and arresting the abnormal flow of urine in an almost miraculous manner. How the marked effect of iodine in diabetes is attained is not well explained, as the only physiological action credited with being capable of exerting a curative influence in the removal of thirst and the antiseptic arrest of excessive tissue metamorphosis; but no other antiseptic or tonic is to be depended upon in such cases. Iodide of potash is not nearly so effectual as the crude iodine, but it is surmised iodine in combination with iron may exert a more direct tonic effect, and I have achieved beneficial results in the administration of liq. calcis iodinatæ.

Iodine possesses the power of causing other substances to be excreted by the saliva when they are combined with it; notably is this the case with iron and quinine. Iodine is excreted in the salivary glands, the saliva containing it is swallowed, iodide again absorbed by the stomach, and carried back by the circulation to the salivary glands once more, hence the reason why iodine is so persistently retained in the system. Another being that it becomes combined with the albuminous matters of the blood and tissues, the combination being only slowly broken up. Both saliva and mucus are stimulated to flow by the action of this agent. Iodine and the iodides act upon the lymphatic system and promote absorption; their action being especially marked in cases of glandular enlargement. In their action on the tissues, they displace or replace chlorine, but the quantity of urea excreted is but little effected by iodine.

In human surgery the application of tincture of iodine to the gums is said to be beneficial in periosteal toothache, and to arrest the receding action of the gums. This may very probably be found to be the case in canine surgery.

Like chlorine and bromine, iodine is a powerful oxidising and antiseptic agent. It resembles mercury in its alterative properties and in stimulating glands. Its stimulation of the skin and mucous surfaces ally it to sulphur and arsenic.

Iodine decreases the rapidity of the pulse when absorbed into the blood but has little effect upon the blood pressure. It has a very slight tendency to raise the temperature; is freely absorbed into the blood from mucous surfaces, and the sodium iodide quickly enters from the alimentary canal. It is eliminated by the urine, nasal mucous membrane, saliva, intestinal mucus, and milk, in all of which it may readily be detected; as it is more readily eliminated by the saliva than the urine, it remains a considerable time in the body. It is readily diffused and detected in the various secretions and five minutes after administration of a soluble preparation iodide has been found in the urine, whilst the urine of a horse which had one single large dose in bolus afforded indications of iodine for three days (Finlay Dunn). In long continued doses it may produce atrophy of the mammæ, ovaries, and testes.

It has been stated that very large doses affect the nervous system, causing

even paralysis of the muscles, but I have failed to find a record of this resnl in veterinary medical literature; whilst iodism is scarcely, if ever, seen in veterinary practice.

When applied to the unbroken skin it causes a slight warmth, and afterwards a little itching. Stronger applications produce a painful burning sensation and desquamation of the epidermis. In still stronger solutions vesication and abrasion ensue.

When iodine is swallowed, contact with the alkaline secretions ensures solution and conversion into albuminate and sodium iodide. Two to three drachms given to dogs was speedily evacuated by vomiting.

Horses and cattle are less susceptible to both the local irritant and general constitutional effect of iodine than the human subject and dog, probably owing to the large quantities of starch in the alimentary canal. Forty to sixty grains (Hertwig) given to horses twice a day for 14 days continuously, caused merely slight diarrhœa with black evacuations and increasing emaciation. As much as two oz. daily have been given to horses, and even more to cattle, with no untoward results (Finlay Dun). Given in the solid form the iodine would be slowly and perhaps only partially dissolved and absorbed, and during tardy solution must have, in great measure, been neutralised by contact with starchy food.

In *The Veterinary Record*, Vol, VI., No. 307, appears an article on the Treatment of Purpura Hœmorrhagica, by Mr. J. A. W. Dollar, from which one gathers Professor Dieckerhoff, of the Berlin Veterinary School, was the first to advise and use iodine in the treatment of this most fatal disease. The writer goes on to record the history of a very bad case treated by another German named Schaumkell, from date of admittance on January 16th, with a temperature of 105 4/5ths F.; respirations 30, and pulse 75 per minute until the 24th of January, when the patient was deemed convalescent. During that period the animal had injected into his trachea 18 drachms of iodine solution (of strength one part iodine, 5 iodide potassium, 100 water) twice a day for first three days, then brought down to once a day later to 12 drachms until January 24th, when all internal remedies are stopped. This, the writer explains, is an aggravated case, and that Dieckerhoff gives but 3 to 9 drachms of the solution twice a day in ordinary cases.

Since this article, Mr. Dollar and others have tried the treatment and reported their experiences, and the result is that iodine must henceforth be considered practically a specific for purpura, and few as my cases of the disease are, I shall certainly put the treatment to the test.

Morton records an instance of atrophy of the testicles with loss of sensual desire in a bull as a result of the administration of iodine, but doubts are entertained of its effects in arresting the secretion of milk. Moderate doses in properly soluble form produce in the domestic animals well marked results.

Iodine stimulates the secretion of the nasal mucus and saliva and of the pancreatic and biliary fluids; increases tissue metamorphosis and the removal of waste products, and improves the appetite. Various morbid processes are checked, excessive thirst and inordinate secretion of urine are arrested, and glandular enlargements absorbed. Patients taking iodine acqire a tolerance of it.

Iodine is not cumulative. In man it has been given for more than a year without deleterious consequences, and with due cessation of the administration, its effects speedily cease. It is given to a man as liq. iodi. B.P. in cases of vomiting and might prove a beneficial agent in this disorder in dogs.

Iodine should be administered two hours after eating in order to diminish the proporiion otherwise converted into the mild insoluble starch iodide. It is advisedly given for a week or ten days, withheld for one or two, and, if necessary, again resumed.

It is considered more satisfactory (although less convenient) to administer the iodine in water dissolved with a little iodide of potassium, than in a ball, in order to secure a more perfect solution and certain action. The tinctures have no advantage over the watery preparations. For external application.

Iodine	1 part.
Iodide of potassium	½ „
Water	8 „

may be used pure or diluted according as to whether mild stimulation or strong blistering effect is desired.

Iodine water in strength of 1 in 7,000 is said to destroy the spores of bacilli in one day. It is recommended in ozæna, but probably in veterinary practice it would be superseded by iodoform, pure or diluted with quinine and bismuth.

Iodine has been detected in the blood, saliva, and urine, and even in the urine of a sucking child whose mother was taking iodine.

Dr. Huchard claims to have cured 20 cases of angina pectoris with sodium iodide

As previously stated iodine is freely absorbed into the blood from mucous surfaces, and the sodium iodide quickly enters from the alimentary canal. In the blood the element is first combined with sodium, but this salt appears to be decomposed, iodine temporarily set free, some of the red corpuscles broken down (if the iodine is in large quantity), and bloods effusions and urine ensue—Not recorded in veterinary literature.

The iodide of sodium and albuminous compounds pass very quickly from the blood into the tissues and especially into the secretory organs and lymph glands, but are very scantily noted in the nervous centres. By this liberation of iodine in the tissues it is enabled to leave them again passing rapidly through the protoplasm of the body, and sharing in its metabolism by combining very loosely with the albuminous molecules no doubt. Iodine accelerates tissue change. Iodine is rapidly excreted, part of the sodium salt is thrown out unchanged, part decomposed and iodine again set free to exert its local action remotely. The diuretic action of iodide of potash is believed to be due to the potassium.

It is conjectured iodine either spares the liver (the chief source of urea) or accelerates the metabolism of the plasma rather than the tissue elements themselves, as no increase of urea or bodily wasting accompanies this effect.

In the human subject, in addition to the effect of iodine applied externally, and administered in the form of iodide internally, it has a most characteristic effect upon syphilitic affections.

In subacute and chronic inflammations of various kinds, such as exudations and effusions in connection with the joints and serous cavities, and some forms of pulmonary consolidation, iodide of potash may promote absorption by stimulating local nutrition: with the internal administration the external application of iodine being combined. Scrofulous affections in either man or the lower animals, especially when principally confined to the lymphatic glands, are benefited by the local application of iodine and the internal administration of the iodide of iron, On the other hand, phthisis is rarely affected by the iodides. In enlargement of the liver and udder, and in mesenteric disease, as well as in anæmia, the iodide of iron is notably serviceable.

In chronic rheumatism in which debility is not a pronounced symptom, and in arthritis, iodine is beneficial.

Potassium and sodium iodides retain the chief properties of iodine, but are less irritant and less active as gland stimulants, but more apt to affect the kidneys.

Bing holds that free iodine and its readily decomposable compounds are

narcotic—paralysing the cerebral centres by direct action on the nervous structures, and finally proving fatal through the respiratory centre.

The heart vessels and body temperature are unaffected by iodine, and the depressing effects on these of iodide of potassium is said to be caused by the potassium.

Iodide of potash is prescribed as an alterative and resolvent in the second stages of inflammation after the acute symptoms have subsided. It aids the removal of hydrothorax, recent exudations on mucous membranes, and of glandular enlargements.

American practitioners prescribe iodine solutions in combinations with small doses af carbolic acid in febrile attacks, particularly when depending upon malaria, and Dr. Anderson considers it a cheap substitute for quinine in these cases, curing ague where quinine has failed.

The iodides of iron, copper, and mercury exhibit mainly the action of their powerful bases.

Professor Williams strongly advocates the internal and external administration of liquor hydriotatis et arsenici in the treatment of psoriasis and, unless my memory serves me badly, the late much beloved and respected Professor Robertson used to speak in equally high terms of its action.

The administration of half-a-drachm each of iodine, iodide of potassium, camphor, and belladonna extract is attended with the best results in the irritable cough, profuse discharge of catarrh, sore throat, and bronchitis (especially of a chronic or epizootic type) amongst horses.

Inhaled, diluted with steam or dry air, it soothes the irritable respiratory surfaces in horses, arrests muco-purulent discharges, and is by some recommended in hoose in calves as an agent fatal to the filariæ.

Iodide of potassium is an indirect antispasmodic, administered with marked benefit in asthma and emphysema.

Iodide of potassium is said to be remarkably useful in curing and alleviating aneurism in the human subject by causing a reduction of blood pressure by the alkali, the coagulating effect of the iodine on the blood, and the specific effect af iodine on the chronic inflammatory changes in the wall of the artery which have led to the dilatation.

Iodide of potassium is an alterative, deobstruent, antispasmodic, and diuretic. As an external application to the unbroken skin it is not nearly as effectual as iodine and other of its compounds, it having been stated that it is inert unless decomposed by the sweat to enable it to become absorbed. Iodide of potassium depends for its action partly on the iodine and partly on the potassium. It is readily absorbed (as are the other alkaline iodides) in internal administration. Iodine is supposed to be set free from the iodide, is taken up again by the albuminous substances, and the entrance of the iodine molecule into their composition causes them to undergo more rapid metamorphosis.

In the *Journal of Comparative Pathology and Therapeutics*, Vol. V., Part II., Professor Nocard directs attention to internal administration of iodide of potash in the treatment of actinomycosis in which he gives the most satisfactory accounts (confirmed by many others since) of the result of his experiments. Until quite recently this disease was treated by the local application of soluble phenyl (a compound of iodine and carbolic acid), now this is proved unnecessary, and the only untoward result of the new treatment is a peeling of the epidermis with, in some instances, a certain amount of loss of hair.

When administered as an antidote to mercury and lead poisoning, the mercury and lead are set free by it from their combination with the tissues, and entering once more into the circulation are eliminated most rapidly by the kidneys, salivary glands, probably by all the mucous membranes and skin.

Arsenic is said to modify the ill effects (Iodism) of iodide of potash and prevent the eruption. The iodides of potash and soda may each be given where iodine is indicated, but these salts are less irritating, and have the advantage of being diuretic, hence are especially indicated in ascites and hydro-thorax.

In man large doses are said to irritate the stomach and disorder the digestion. In the blood iodide of potash is converted into the iodides and iodates of ammonium and sodium, and during its elimination ozone is liberated (Bucheine); the lymphatics are stimulated, tissue metamorphosis is increased and waste products got rid of. It has been stated (Maillet, quoted by Tabourin), that two or three drachms of iodide of potassium given to a horse acted as an irritant poison, and that three or four caused fatal intestinal hœmorrhage. This must be a fabulous mistake, for as much as from four drs. to one oz. have been given with no more ill results than slight diuresis and occasional catharsis. Those doses given twice a day do not produce in horses any irritation or symptoms of iodism.

No better agent than this can be used in the treatment of lymphangitis in the horse, especially when combined with iron; where any excess of effusion is present, the stimulating and antacid effects of ammonia will be found of assistance. In chronic rheumatism it has the advantage over iodine of being diuretic.

Iodoform is described as a local anæsthetic. It is antiseptic and disinfectant. The chief use to which it is applied in veterinary medicine is (by means of the insufflator) in nasal gleet, either pure or diluted with equal parts of quinine and bismuth.

Sir Joseph Lister, in an address delivered at King's College Hospital on January 18th, 1893, says: "It is unquestionably true that iodoform exercises a powerful antiseptic influence upon wounds, but it is a very peculiar antiseptic, having extremely little influence over bacteria outside the body; the most probable explanation of this apparent anomaly being that suggested by Behring, viz., that iodoform produces its beneficial effects, not by acting directly upon the bacteria, but by inducing chemical changes in their toxic effects, he (Behring) having ascertained as a matter of fact that some of these toxines are altered chemically by iodoform, and at the same time rendered harmless.

A most useful method of applying iodoform to wounds is by means of cotton wool impregnated with it or by means of an ointment of the following composition:—

Iodoform..	gr. iv.
Ol. Eucalypt.	oz. i.
Vaseline	oz. i.

Ringer highly recommends its use in eczema. It has been tried in a multiplicity of cases internally with little, if any, beneficial results.

Iodal is a similar but non-odorous preparation. The poisonous effects of iodoform noted in horses sometimes are counteracted by hourly 10 grain doses of bicarbonate of potash.

Biniodide of Mercury is almost as irritant as corrosive sublimate. Is very rarely used internally, but in the form of ointment is applied as a stimulant, counter-irritant and caustic. It is a very effectual agent in the reduction of bony and ligamentous enlargements, spavin, splints, ringbone, &c., penetrates deeply, arrests chronic inflammation, and develops healthy action in chronic enlargements and indurations of spraiued tendons, bursæ, and joints; is applied as a counter-irritant in sore throat when the other blisters have been resisted. Is recommended by some in the early stages of farcy!

For ordinary purposes one part biniodide to eight of lard is generally used, but Mr. Dollar recommends one biniodide and ten vaseline, prepared in a water bath,

it keeping a better colour and sweeter than the other preparation. To avoid damaging the hair follicles, rubbing down a little ext. belladonna with the unguent is advisable. As a stimulant to the chest walls in pleurisy and pneumonia, 1 part biniodide to 16—32 lard is of much advantage. Heat (especially of the sun) often has a marked effect upon its action.

Green iodide of mercury has been described as a useless addition to the pharmacopœia, but in the so-called mallenders and sallenders at the bends of the knee and hock joints I have seen a marked benefit attend its use.

Iodide of sulphur being non-poisonous makes an excellent mange dressing for the dog.

Iodide of ammonia and sodium would most probably be very efficacious in the treatment of canker of the ear of the dog, as in man it is given internally, and used externally in thickening of the membrane of the ear. Iodide of potassium is also of value in this affection.

Iodide of zinc is used in enlarged tonsils and glandular swellings.

Iodide of iron is a tonic, alterative and astringent. It secures increased number and development of blood globules, improves nutrition, and assists in promoting absorption of solid and fluid exudates. Mr. Morton spoke highly of it in the treatment of polyuria and nasal gleet. The syrup may be used in canine practice.

Iodide of copper resembles in its action that of other copper salts. It is of benefit in œdema of the legs, and as an astringent in ill-conditioned ulcers and inveterate grease. No sufficient proof of its superiority over the sulphate has been given.

Iodide of lead. The iodine is supposed to have a beneficial effect upon the corpuscles of the spleen, and the lead to cause contraction by acting upon the involuntary muscular fibres of the organ. The ointment is applied to enlarged glands.

Gentlemen, I have endeavoured to bring the views of others prominently before your notice, and, in thanking you for your kind attention, must ask you to add to this kindness by a liberal discussion on the subject.

Authorities quoted: Ringer, Mitchell, Bruce, Lauder, Brunton, Finlay Dun, and others.

Discussion.

Mr. CARTER thanked the essayist for his paper. He had not much experience of iodine as an internal remedy, but should feel inclined to use it in the future in such cases as recommended by the essayist. He had found strong iodine liniment one of the best dressings for enlarged bursæ, and iodoform a capital dressing for wounds.

Mr. BURDEN said his experience of iodine was also confined to its use as an external dressing.

Mr. BARFORD related a case of purpura hemorrhagica which he had recently had under treatment, and the result obtained with the iodine treatment was exceedingly satisfactory.

Mr. GOODALL had found iodine and pot. iodide very efficacious in purpura hemorrhagica if persevered with, and had also found tinct. iodine good as a dressing for skin in cases of herpes, but did not believe in it for eczema.

Mr. SIMPSON congratulated the essayist on the excellence of the paper, and after hearing it read felt that the stock of drugs in one's surgery might be considerably reduced. He emphasised the use of pot. iodide in actinimycosis and iodoform in cases of canker of the dog's ear.

The PRESIDENT had used iodine as a dressing in skin diseases, especially ringworm, also internally in diabetes in canine patients with the best results. He had also found iodoform to be one of the best dressings for wounds in dogs.

Mr. BAKER having replied to the several speakers, on the proposition of Mr. GOODALL, and seconded by Mr. SIMPSON, a very cordial vote of thanks was accorded Mr. Baker for his paper.

It was decided to hold the next meeting at Southampton in June.

After votes of thanks to the President and the ex-President, the members adjourned to dine together.

The Dinner.

The dinner was served by Mr. Henland in his best style, and all the members stayed to partake.

After dinner the usual loyal toasts were proposed, followed by that of the President of the Royal College of Veterinary Surgeons.

In proposing the toast the CHAIRMAN spoke in glowing terms of the manner in which the presidential duties had been carried out during the past nine months, and he felt sure that the dignity of the office had suffered nothing by the conduct of their fellow-member who had given so much of his time for the benefit of the profession, and whom he was sure they all felt proud to have amongst them that evening.

Mr. SIMPSON, in reply, thanked the members for their expression of confidence in him, and, in replying to the toast as the President of the R.C.V.S., gave the members some idea of the work to be got through and the time required for its performance. He also related some incidents in his recent interview with the President of the Board of Agriculture, the probable benefits that would accrue to the members of the profession, and concluded by expressing a hope that all the members would this year attend the annual meeting of the R.C.V.S., and stay and support him at the dinner in the evening.

Several songs were sung, and a very convivial evening was spent.

THE YORKSHIRE VETERINARY MEDICAL SOCIETY.

AT the last meeting of this Society, held in Leeds, on Friday, 24th April, ult., the following address, "On the Contrast between the Present and the Past Practice of Veterinary Medicine and Surgery," was given by Principal W. WILLIAMS, New Veterinary College, Edinburgh. At the outset he explained that he was not going to give them a scientific speech, but a brief history of the profession—the methods of treatment in the past and in the present. First of all, there was the farrier, who was generally the village blacksmith, but sometimes a coachman. The farrier disdained to look at anything but a horse, and considered himself disgraced if he were asked to look at a cow; he was a horse doctor in every sense of the word. Then came the cow doctor, who never thought of interfering with the practice of the farrier. Both of these men, whose poverty was often as great as their pride, disdained to look at a dog; to be called in to look at a dog was beneath their contempt. Neither the horse doctor nor the cow doctor would consent to castrate a horse. This was left in the hands of a travelling tinker, and often in the hands of gipsies, who did their work well. He had seen these men operate. Now the veterinary surgeon did all the work that these four men did. Professor Williams proceeded to describe some of the early diseases, and the primitive systems of treatment that in some instances were adopted. He said he thought that the late Mr. Collins was the first to suggest that, instead of weakening the feet, they should be allowed to remain strong, both as a preventative and as a cure for laminitis. Some of the old theories, exploded for more than a quarter of a century, were being re-introduced; they had now suggestions that in laminitis, in navicular disease, and in side bones they

should make fissures in the feet in order to make the expansion. Thrush and cancer were then treated on similar lines to now.

Dealing with spavin, which was then considered to be rare, most hind-leg lamenesses being ascribed to stifle and hip joint diseases, he had seen numerous cases of splint lameness treated for navicular disease and turned out to grass. Nowadays navicular disease had greatly diminished. There was not certainly one-tenth of the cases they had ten years ago. He did not think it was due to the breeding, but to the shoeing; they found navicular disease incurable and splint lameness curable in time. In past days, no matter whether the horse was lame in front or behind, he was generaliy bled. Then there were specialists for the treatment of quittors, and there were some men who had the reputation of being able to cure glanders.

Lymphangitis was called water farcy, and the disease was treated very much as now. After describing ophthalmia and its treatment, Principal Williams went on to speak of internal diseases which, in his younger days, were all treated alike: there were heavy bleedings in all cases, and often a purgative in chest affections. This practice not proving successful, the stimulant treatment, propounded by Dr. Tod in human practice, became the fashion, but was not carried out to the same extent as at present by some practitioners. When this was found not to answer, the counter irritant theory began to be carried out, it being considered that the artificial destroyed the natural. There was also external blistering, for they said the inflammation must be killed. If the animal did not die in a few hours, if he still continued to struggle, some applied the actual cautery, in the form of a red-hot shovel to the sides; in cases of abdominal pains, to the abdomen. Perhaps some of his hearers hardly knew how animals were bled in the past. They bled them all, no matter what their complaint was. If a horse breathed quickly he was bled; if he was off his food he was bled; and if he had colic pains he was bled. He had seen the viscera of a pullet given as a cure for colic. He was there last year, and heard a farmer tell a veterinary surgeon that he had administered it to a horse, but that the animal was no better. Another had given a sick cow red herring porridge. He had seen a live frog given for constipation of the bowels. They might think that he was romancing, but nothing of the kind; he was simply telling them facts. The cow doctor was the first to be "undone." Then the horse doctor fell from his high estate and combined the duty of cattle doctor with that of horse doctor. On the appearance of foot and mouth disease about 1842, and pleuro-pneumonia about two years later, the horse doctors, following the example of the few qualified veterinary surgeons, turned their attention to cattle. These diseases spread all over the country, and drinks for foot and mouth and pleuro were sold in thousands. The ordinary treatment for foot and mouth disease was bleeding, purging, and feet dressing. Some of the old cow doctors maintained that even foot and mouth disease, and pleuro-pneumonia were "Tail ill." They bled the animals from the tail, made a large incision, filled it with tar and salt, bound it up tightly, and, to prove that they were correct, the tail often sloughed off below the binding. And now he came to the veterinary surgeons, who were bringing to bear their scientific knowledge, which was hardly more successful than the accredited knowledge of the farrier. These men (as well as the farriers) believed in the correctness of their treatment. They had some theory to support them, but animals died. Then homœopathy became to be tried, and such men as Haycock and Moore were credited with very successful results. He was no believer in the homœopathic doctrine, but he must confess that the results were most startling, and even death robbed of its horror. An animal tortured by irritants and driven mad by alcoholic

stimulants, died a most agonising death. Horses invariably got through chest affections with homœopathic treatment.

Reverting to the bleeding of horses, he recalled a singular case in Lancashire. A veterinary surgeon called in to a case in consultation said, "Bleed him." The reply was, "We have taken 22 quarts of blood from him yesterday;" and the consultant answered, "Take 22 more." He need not tell them that they had not a chance to do that. He remembered that some of the veterinary surgeons, especially those from Scotland, and some of the old farriers, thought that pleuro-pneumonia and foot-and-mouth disease were not contagious diseases. Professor Dick taught that foot-and-mouth, pleuro, and rinderpest were not contagious diseases. As to the actual cautery in cases of abdominal pain, that treatment was highly recommended by Professor Dick in enteritis. It was no wonder that the late Mr. John Lawson, of Manchester, used to say that a man had to fill a 50 acre park with dead horses before he knew his profession. So much for veterinary science in the days of which he was speaking. They now, of course, smiled at the absurdity of the violent remedies of the past, but the men practising them were honest in their belief and applied what they thought was proper. If a man then dared to have an opinion of his own, depend upon it he had a very unhappy life of it, if it were in the power of people to make it so. Because cases recovered, these men thought they were successful. They did not count the number of animals they had killed.

In conclusion, Professor Williams said it had been his endeavour to point out what was considered the proper method of treatment in his younger days, and to compare it with what was in vogue now. The Professor was warmly applauded on resuming his seat, and throughout his interesting speech was punctuated with laughter and applause.

ONTARIO VETERINARY COLLEGE CLOSING.

THE closing exercises of the Ontario Veterinary College were held recently. The entrance of the Principal, Dr. Andrew Smith, and the invited guests, was the signal for enthusiastic applause on the part of the students. Among those present on the platform were Lieutenant-Governor Kirkpatrick, Robert Jaffray, John Aikins, R. J. Score, Dr. Duncan, Dr. Sweetapple, W. W. Withrow, Dr. J. O. Orr, and others.

Dr. SMITH'S address called attention to the fair attendance at the college this year, despite the depression, students being present from all over the continent, and from England, Scotland, and the West India Islands. He also referred to the fact that the veterinary profession was improving at the present time.

Dr. DUNCAN read out the list of prize winners and graduates. The gold medallist for the year is Mr. G. R. C. Merriam, of Jamaica, West Indies. The gold medal for dissecting, granted by the Toronto Industrial Exhibition, was won by Mr. J. F. J. Black.

The following is a list of the prize winners:—

GRADUATES.

William Agnew, Belgrave, Ont.; Fred. A. Armstrong, Fergus, Ont.; T. H. Agnew, Evanston, Ill.; Simon Beattie, Waterloo, Wis.; R. J. Besteel, Grafton, North Dakota; John F. J. Black, Dublin, Ireland; Paul Dudley Bray, Cannington Manor, Assa.; Arthur Brechter, Beaver Dam, Wis.; William G. Bunnell, Heywood, Manchester, Eng.; Basil Aubin Brown, Highbury, London, Eng.; Francis J. Braund, McGregor, Man.; Patrick Cain, New

Perth, P.E.I. ; Merton J. Chrisman, Frewsburg, N.Y. ; John L. Clark, Stratford, Ont. : Keller Lark, Cooperstown, N.Y. ; Edgar W. Culley, Avon, N.Y. ; Herbert Caldwell, Louisville, Ky. ; John Cramer, Elwood, Ind. ; Robert H. Craig, Bushton, Ill ; John A. Campbell, Teeswater, Ont. ; Edward Dingman, Maplewood, Ont. ; Richard A. Dennis, Adams, N.Y. ; John R. Donahue, St. Thomas, Ont. ; Charles H. Drake, New Haven, Conn. ; F. J. De Land Clinton, N.Y. ; A. F. Elliott, Grandin, North Dakota : Henry T. Ferguson, Lake Geneva, Wis. ; John B. Finch, Ramseys, North Jersey ; Albert B. Gay, Randolph, Vermont ; D. F. George, Overton, Ohio ; John F. Gillespie, Ridge Farm, Ill. ; Wm. J. Grady, Quincy, North Dakota ; N. O. Gilbert, Brooklyn, N.Y. ; A. Gibson, Berlin, Ont. ; Leopold Hay, Warsaw, Poland ; Chas. Haas, St. George, Ont. ; William W. Hall, Leeds, P.Q. ; Albert B. Hecker, Albany, N.Y. ; J. B. Hill, Canandaigua, N.Y. ; Roy F. Hoadley, Yorkville, Ill. ; Walter E. Howe, Delphi, N.Y. ; Walter N. J. Hurt, Matlock, Bath, England ; Alfred P. Husband, Nassagaweya, Ont. ; T. M. Hadwen, Wheatland, N. Dak. ; George R. Inglis, Campbellville, Ont. ; Johnson J. Irwin, Sheffordvale, Que. ; Roy E. Jackson, Tyler Hill, Pa. ; P. H. Johnson, Racine, Wis. ; J. E. Johnson, Texas, Ohio ; Elmer H. Judkins, Ohioville, N.Y. ; Chester P. Keith, Bridgewater, Mass. ; Thomas LeRoy Kelly, Lakeside, Ohio ; John C. Kingan, Pittsburg, Pa. ; Rudolph Kjerner, Rochester, Minn ; Wm. H. Kenwell, Cuba, N.Y. ; John Lawrason, St. George, Ont. ; Harry L. Leberman, Meadville, Pa. ; Wm. S. Longacre, Mantz, Pa. ; J. T. Leary, Ellicottville, N.Y. ; Newton G. Le Gear, Imlay City, Mich. ; John Dennis Macdonald, jun., London, England ; Robert W. McDonald, Jackson, Mich. ; Alexander J. McKay, Tavistock, Ont. ; Pete McNeal, Shickshinny, Pa. ; C. H. McGillicuddy, Lewiston, Me. ; Daniel Maher, Godfrey, Ill. ; H. E. Marshall, Ottawa, Ont. ; G. R. C. Merriam, Negril, Jamaica, W., Indies ; Sheard Moore, Lowell, Mass. ; Lemuel Mulligan, Ottawa, Ont. ; W. N. Neil Tower Hill, Ill. ; Brittain E. Nevel, Huntersville, Pa. ; Lewis A. Nutting, Syracuse, N.Y. ; John Oliver, jun., Columbus, Miss. ; J. D. Paxton, St. George, Ont. ; H. C. Peters, Greenleaf, Minn. ; J. Orville Reed, Danville, Pa. ; Andrew W. Reilly, Grand Valley, Ont. ; Llwellyn T. Richards, Granville, Ohio ; James L. Riddell, Denver, Col. ; Peter A. Robinson, Emerson, Man. ; Louis D. Regan, Emporia, Kan. ; Herman R. Ryder, Delphi, N.Y ; F. G. Scammel, Lafayette, N.Y. ; Charles A. Seaton, Bloomington, Ont. ; S. L. Shaw, Summer Hill, Ill. ; Geo. F. Sheppard, Edinburgh, N. Dakota ; Thomas Veitch Simpson, Yorkton, N.W.T. ; John J. Sparrow, Victoria, B.C. ; Ray J. Stanclift, Derby, N.Y. ; Wesley C. Stephens, Newmarket, Ont. ; Donald A. Stewart, Ivan, Ont. ; John H. Summers, Oswego, N.Y. ; Zera Strong, Carleton Place, Ont. ; James A. Stevenson, Morden, Man. ; Francis C. Simpson, Bridlington Quay, England ; J. W. Tooley, Lansing, Ont. ; J. Turnbull, Lowville, Ont. ; J. H. Ellsworth, Vrooman, Vroomanton, Ont. ; Richard E. Willis, Brampton, Ont. ; Arthur R. Walsh, Buffalo, N.Y. ; William Walker, Kingston, Ont. ; M. A. Whinster, Portage la Prairie, Man. ; E. J. Will, Moore's Store, Virginia ; Arthur Edward Williamson, Queenstown, Ireland ; David B. Wilson, London, Ont. ; George E. Wilson, Carleton Place, Ont. ; F. Lockwood-Wingate, Kingston, Jamaica, W.I. ; R. W. Wilkinson, Drumbo, Ont. ; A. C. Woods, Council Bluffs, Iowa, and A. G. Young, Bristol, Que.

SENIORS BY DEPARTMENTS.

Pathology (seniors)—Silver Medal—1st prize, silver, H. R. Ryder ; 2nd prize, F. Lockwood-Wingate ; 3rd prize, R. J. Stanclift, P. D. Bray.

Honors—F. A. Armstrong, J. F. J. Black, J. L. Clark, E. H. Culley, H. Caldwell, R. A. Dennis, J. B. Finch, H. T. Ferguson, L. Hay, W. N. J. Hurt, W. E. Howe, G. R. Inglis, J. E. Johnston, J. Johnson, R. Kjerner, C. P. Keith,

G. R. C. Merriam, A. J. McKay, W. N. Neil, L. A. Nutting, J. D. Paxton, J. L. Riddell, L. T. Richards, H. C. Peters, P. A. Robinson, T. V. Simpson, F. C. Simpson, C. A. Seaton, D. A. Stewart, J. Turnbull, J. H. E. Vrooman, A. R. Walsh, G. E. Wilson, E. J. Will, A. G. Young.

Materia Medica (seniors)—1st prize, J. F. J. Black; 2nd prize, H. F. Ferguson and F. L. Wingate (equal); 3rd prize, C. P. Keith.

Honors—P. D. Bray, J. P. Fitzgerald, H. E. Marshall, G. R. C. Merriam, R. J. Stanclift, F. C. Simpson, T. V. Simpson.

Chemistry (seniors).—1st prize, F. C. Simpson; 2nd prize, R. J. Stanclift; 3rd prize, B. A. Brown.

Honors.—J. F. J. Black, R. H. Craig, E. M. Culley, J. B. Finch, J. P. Fitzgerald, J. E. Johnson, C. P. Keith, G. R. C. Merriam, L. D. Ryan, H. R. Ryder, D. A. Stewart.

Morbid Anatomy (seniors).—Prize—H. R. Ryder.

Honors.—P. D. Bray, R. J. Stanclift, G. R. C. Merriam, J. R. Donahue, W. E. Howe, J. F. J. Black, F. L. Wingate.

Anatomy (seniors).—1st prize, silver medal, R. J. Stanclift; 2nd prize, J. F. J. Black; 3rd prize, E. W. Culley.

Honors.—Wm. Agnew, P. D. Bray, B. A. Brown, W. G. Bunnell, R. H. Craig, J. L. Clark, M. J. Chrisman, Herbert Caldwell, J. R. Donahue, R. A. Dinnis, T. H. Ferguson, W. E. Howe, W. W. J. Hurt, C. A. Haas, W. W. Hall, J. B. Hill, L. Hay, G. R. Inglis, J. E. Johnston, E. H. Judkins, R. E. Jackson, A. Kjerner, C. P. Keith, W. S. Longacre, G. R. C. Merriam, A. J. McKay, J. Oliver, J. D. Paxton, H. R. Ryder, P. A. Robinson, T. V. Simpson, F. C. Simpson, S. L. Shaw, J. J. Sparrow, G. T. Sheppard, D. A. Stewart, J. Turnbull, A. R. Walsh, E. J. Will, R. E. Willis, F. L. Wingate, A. G. Young.

Dissected specimens (seniors).—Gold medal, given by Toronto Industrial Exhibition Association, J. F. J. Black; 2nd prize, 30 dols., F. C. Simpson.

Entozoa (seniors).—P. D. Bray.

Honors.—W. Agnew, S. Beattie, J. F. J. Black, J. A. Campbell, R. H. Craig, E. W. Culley, L. Hay, W. E. Howe, R. C. Merriam, J. Oliver, J. D. Paxton, S. L. Richards, H. R. Ryder, T. V. Simpson, R. J. Stanclift, S. L. Shaw, F. C. Simpson, D. A. Stewart, F. L. Wingate, A. C. Woods.

Physiology (seniors).—1st prize, silver medal, P. D. Bray; 2nd prize, G. R. C. Merriam; 3rd prize, T. V. Simpson.

Honors.—J. F. J. Black, B. A. Brown, R. H. Craig, E. W. Culley, J. R. Donahue, J. B. Finch, L. Hay, W. E. Howe, G. R. Inglis, J. D. Macdonald, Wm. Neil, H. R. Ryder, S. L. Shaw, R. J. Stanclift, J. Turnbull, A. C. Woods, F. L. Wingate.

Best General Examination.—G. R. C. Merriam, gold medal, given by the Ontario Veterinary Medical Association.

Honors.—J. F. J. Black, T. H. Ferguson, Leopold Hay, W. N. Neil, L. T. Richards, H. R. Ryder.

JUNIORS, BY DEPARTMENTS.

Pathology (juniors).—1st prize, W. H. Wheeler; 2nd Prize, G. E. Totten; 3rd prize, W. J. Meloche and E. L. Bertram (equal).

Honors.—H. Buss, F. W. Bryant, G. C. Bowen, W. Brennan, J. B. Campbell, W. Caister, G. R. Caldwell, R. C. Cliff, T. J. Cooper, C. W. Clark, J. Dodd, G. P. Hayter, G. Hilton, F. Hodgson, J. Johnston, J. J. Keleher, F. A. Messinger, A. A. McLachlan, J. A. McKinnon, W. O. McHugh, G. A. McKenzie, I. S. Norton, R. D. Orr, T. M. Owen, J. H. Pierce, H. Pegan, J. R. Rochester, W. W. Richards, G. Rowcroft, J. Miller, W. McElroy, R. Marshall.

Anatomy (juniors).—1st prize, silver medal, G. E. Totten; 2nd prize, R. D. Orr; 3rd prize, R. C. Cliff and G. R. Caldwell (equal).

Honors.—Henry Buss, J. B. Campbell, Thomas Cooper, W. Caistor, George Hilton, Fred. Hodgson, J. N. Johnston, J. J. Keleher, A. McLachlan, W. A. McHugh, W. F. McIlroy, W. J. Meloche, J. P. Miller, I. S. Norton, W. W. Richards, G. V. Rowcroft, G. P. Statter, J. W. Will, S. A. H. Winsloe.

Physiology (juniors).—1st prize, silver medal, R. C. Cliff; 2nd prize, G. Hilton; 3rd prize, W. O. McHugh.

Honors.—C. W. Clark, J. J. Keleher, J. P. Miller, W. J. Meloch, W. W. Richards, G. V. Rowcroft, W. H. Wheeler.

Chemistry (juniors).—1st prize, Geo. Hilton; 2nd prize, G. V. Rowcroft.

Histology and Microscopy (juniors).—1st prize, T. J. Cooper; 2nd prize, C. W. Clark; 3rd prize, R. Cliff.

Honors.—E. Bertram, C. H. Bugbee, F. W. Bryant, T. W. Brown, G. R. Caldwell, J. B. Campbell, H. Chaney, J. Dodd, W. H. Erwin, G. J. Grange, G. R. Hayter, R. C. Harris, G. Hilton, F. Hodgson, J. N. Johnston, J. J. Keleher, G. A. McKenzie, W. F. McElroy, Wm McHugh, J. A. McKinnon, A. A. McLachlan, R. Marshall, W. J. Meloche, F. G. Messinger, J. S. Norton, R. D. Orr, T. Owen, J. H. Pierce, H. Pegan, W. W. Richards, J. R. F. Rochester, G. V. Rowcroft, G. Statter, A. E. Tweedie, C. A. Taylor, J. A. Winslow.

Primary Examinations.—Anatomy—F. G. Atwood, A. McK. Brock, A. E. Dennis, Joseph Gregg, R. J. Marion, W. D. Monk, W. H. Orme.

Materia Medica.—J. P. Fitzgerald, H. F. Hartnett, G. H. Munroe, W. H. Orme, G. A. Wehr.

PRIZES PRESENTED.

After the reading of the list, the prizes were presented by Lieut.-Governor KIRKPATRICK, who afterwards congratulated the College upon its success, and paid a high compliment to the instruction received there. It was gratifying to find that the college had a reputation throughout the world. He believed that in the future skilled veterinary surgeons would be more in demand than ever. He hoped that the students from other countries would take back pleasant remembrances of Canada, but he would like them to remember that Canadians were a high spirited people, who loved their country and the British flag, who, while they liked to be at peace with everybody, still if they were hit they would strike back.

Mr. W. W. WITHROW, President of the Toronto Industrial Exhibition, addressed a few words to the students, and congratulated the principal and those connected with the college on the intelligence of this year's class.

Dr. J. O. ORR also wished the students every prosperity, in a short address, and Mr. R. J. SCORE told the students of the pleasure he felt in being with them.

A compliment Mr. SCORE paid to Dr. Smith, the Principal, was received with great applause by the students.

Mr. JOHN AIKINS added his congratulations to those of the other speakers, and wished the students every success.

This ended the proceedings so far as the presentation of prizes was concerned, and there were then loud cries for "Johnson."

Mr. J. E. JOHNSON, president of the senior class, came forward and read an address to Dr. Smith, the address being accompanied by a picture of the entire graduating class of 1895-96.

Dr. SMITH tendered his thanks to the students for the expression of their goodwill towards him.

CONTAGIOUS DISEASES ANIMALS ACT, 1894.

SUMMARY OF RETURNS OF OUTBREAKS, for the four weeks ending April 18th, 1896.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Glanders including Farcy.	Rabies.	Anthrax.	——
Outbreaks confirmed 1 Cattle, found diseased 7 Slaughtered, through exposure to infection 152	Outbreaks confirmed 467 Swine, slaughtered, diseased, or exposed to infection 5433	Outbreaks reported 43 Animals reported during the four weeks as attacked 93	Cases in dogs reported 52 Other animals ... 9 Destroyed, as having been exposed to infection 35	Outbreaks reported 25 Animals attacked 59	

SCOTLAND.

None	Outbreaks confirmed 30 Swine, slaughtered, diseased, etc. 434	Outbreaks reported 3 Animals reported, etc. 6	None	Outbreaks reported 11 Animals attacked 18	

IRELAND.

None	Outbreaks confirmed 94 Swine, slaughtered as diseased, etc. 598	Outbreaks reported 1 Animals attacked 1	Cases in dogs reported 49 Other animals 26 Destroyed, etc. 48	Outbreaks reported 1 Animals attacked 1	

SWINE FEVER STILL INCREASING.

DURING the first quarter of the present year there were 1,524 outbreaks of swine fever in Great Britain, compared with 1,300 in the first quarter of 1895, and 1,107 in 1894. The number of swine slaughtered as diseased or as exposed to infection was 19,596, against 9,584 in the first quarter of 1895, and 14,057 in 1894.

IN Germany, according to official returns made up to March 31st last, there were cases of foot-and-mouth disease in 1,214 parishes or districts, involving 3,026 farms; pleuro in 27 parishes and 58 farms; farcy in 36 parishes and 38 farms.

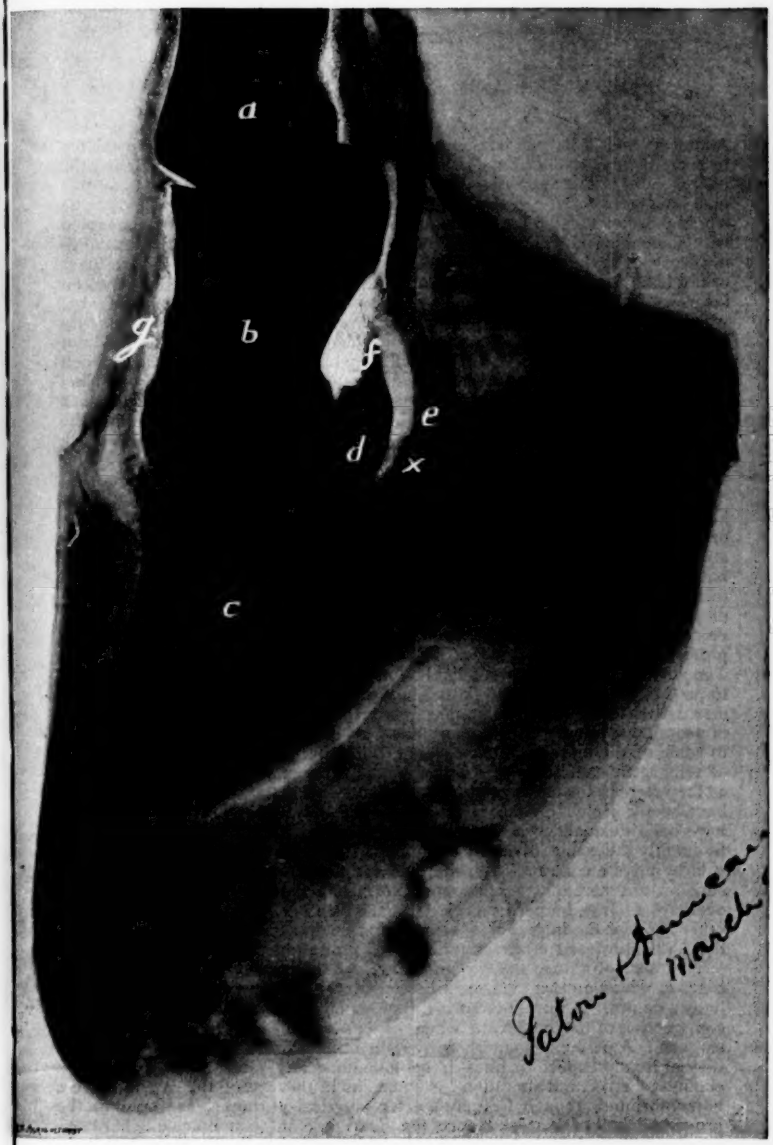
RABIES.—Since the muzzling order came into force in London, just two months ago, 13,608 dogs have found their way into the hands of the police, and of these 10,185 have been destroyed. The number of dogs that proved to be suffering from rabies in the two months was 42.

THE NEW PHOTOGRAPHY.

Two zealous natural scientists, Professors of the Cirencester Agricultural College—Mr. G. Paton and Mr. Cecil C. Duncan—have been working at the new photography, and obtained very interesting results, some of which they have obligingly placed at our disposal. The penetrating Röntgen **X** rays, in their skilful hands, have given skiagraphic pictures of the skeletons of frogs, fishes, and other small animals; through their covering of flesh and skin. Fractures, other injuries and diseases of bone, have been clearly demonstrated; portions of needles lodged in the sulci of bones of the hand and arm have been diagnosed and their position localised. More recently the Professors have produced the accompanying admirable print of a horse's pastern and foot. The foot was placed over an ordinary photographic plate, and vertically under the **X** rays of the focus tube; the coil used was an Apps induction working at a 3-inch spark. After exposure of a few minutes, the plate was developed in the usual way, and presents a distinct picture of the bones, tendons, and ligaments of the pastern, taken, of course, through the hair, skin, and subcutaneous tissues, and of the bones of the foot seen through the solid hoof. There is also observable towards the upper part of the fetlock the fibroid thickening of a sprained tendon.

These are curious and important results, disclosed by these wonderful new processes, concerning which so much has yet to be learned. Of the nature of this new light we are much in the dark. Does it differ from the light with which we had been familiar in consisting mainly of longitudinal, instead of transverse vibrations? Professor Röntgen has demonstrated that it is not refracted by lenses or prisms, and hence cannot be focussed. It is not absorbed or diffused by its passage through air, but it penetrates through an inch deal, through a series of stout sheets of superimposed cardboard, or through many hundred pages of a printed book, as well as through the soft animal tissues.

The practical applications of the new light in the arts, in medicine, and in surgery, cannot at present be fully realised. Processes, however, will be improved. The requisite battery, the powerful induction coil, and the Crooke's tube are at present expensive, and each picture has hitherto cost 20s., but this cost can probably be considerably reduced. With better appliances, and more skill in using them, the failures to obtain good pictures, which most experienced operators have hitherto placed at upwards of a tenth, will be diminished. The requisite period necessary for exposure will probably be materially reduced, a matter of importance in obtaining photographs of the lower animals. Numerous workers at home and abroad, in human, and latterly in comparative and veterinary medicine, are week by week making fresh achievements. Needles, bullets, and other foreign bodies lodged in the tissues have been discovered, and their removal facilitated. Tuberculous disease of bones and joints, ulcers, and other lesions have been identified and successfully treated. Morbid conditions of the urinary bladder both of men and animals have been portrayed. We have not yet heard of the **X** rays being yet used, as they well might be, for the diagnosis of these serious cases of obstruction and displacement of the bowels of horses, or for localising those foreign bodies—hair balls, bones, pieces of leather, needles, or skewers—not infrequently lodged in the digestive track of cattle, and occasionally in that of dogs. The Cirencester professors suggest that in cases of occult spavin of ringbone, or where veterinarians differ as to their opinion of the nature or site of disease, the expert will be called in to elucidate the subject with the new light.



(*a*) Great pastern bone. (*b*) Small pastern bone. (*c*) Coffin. (*d*) Navicular bone. (*e*) Flexor perforans tendon. (*f*) Long inferior sexamoid ligament. (*g*) Extensor pedis tendon. (*x*) Seat of sprain of tendon passing navicular bone.

THE VETERINARY SURGEON AND HIS CLIENT.

BY FALCON.

As buyers and sellers of horses know, warranties, once inseparable incidents to horse-dealing transactions, have now gone entirely out of fashion, and the only wonder is that they lasted so long. They endured for all time, and if a man bought as a three-year-old a horse which became unsound at thirteen, he would win in an action for breach of warranty if he or his advocate, coupled with some good evidence, could induce the jury to believe that the unsoundness existed at the time of sale. Whether the seller knows of the unsoundness or not is immaterial if he give a warranty; when he does so he becomes an insurer. At one period an attempt was made to argue that the paying of what was termed a "sound price"—that is to say, a tolerably high price—was tantamount to a warranty of soundness; but this contention the judges could not stand. Nevertheless, a good many sellers who, in accordance with the then prevailing practice, gave warranties, were very hardly dealt with, and often had to pay damages, when it was more than likely the unsoundness alleged as a breach of warranty was induced by the ill-regulated stable management of the buyer. Without, therefore, going more deeply into the history of warranties, it will suffice to say that it is now quite the exception for one to be asked for or given.

In lieu thereof the custom now is for the intending buyer to have the horse he fancies examined by a veterinary surgeon of his own selection, and to take or refuse the animal according to the terms of the certificate. No human institution is perfect, and under the system a certain number of mistakes occur; but, on the whole, it has been found to work well. It will be at once perceived that the first result is to absolve the seller from responsibility; and, if a dispute should arise—if the horse passed as sound, or practically sound, by a veterinary surgeon, proves to be unsound—it is between the buyer and his professional adviser, instead of, as formerly, between the buyer and seller. The veterinary surgeon is not liable for a mere mistake, and so it has come to pass that "horse causes," those once marvellous opportunities for professional disagreements, have happily become rare; the money wasted on them in years gone by was simply enormous. Nevertheless, we have only to refer to some of the more prominent shows to find out that, under the new order of things, the contradictory opinions of the veterinary officials are as common as they were in the old days when horse causes flourished exceedingly. Horses have been rejected by one veterinary surgeon and passed by another; they have been disqualified at one show and taken a prize at the next. There is frequently the same diversity of opinion in the case of horses bought and sold by private contract. A seller has his horse examined by a veterinary surgeon, and perhaps passed sound; yet, when the buyer's expert comes to overhaul a horse, he perhaps rejects him. At other times the boot is on the other leg, and the buyer finds at last that he has bought an unsound horse, though his professional examiner declared it all right.

This sort of thing, though annoying, cannot be helped, since there are cases in which no two men see a horse with the same eyes—even horse show judges do not. A question, however, of equal importance to a buyer is the construction of the certificate when he has obtained it from his veterinary surgeon. A perfectly sound horse, or, in other words, a legally sound horse, we can hardly expect to find—if he has done any real hard work, for the slightest "structural alteration" is sufficient in the eye of the law to make a horse unsound, though he may be, for practical purposes, as sound as the proverbial bell of brass. Hence the veterinary surgeon notes all shortcomings, and when the buyer comes to read his certificate he finds that a certain bay gelding has a slight inequality in the size of his feet, an incipient splint

on the near fore-leg (in a position in which it is unlikely to cause lameness), a suspicion of coarse hocks, a bursal enlargement, with perhaps several other defects : yet the horse is said to be practically sound. The initiated can, of course, read between the lines, and can, armed with the professional document, estimate the value of a windgall or a splint far removed from a position likely to cause injury. With the inexperienced it is not so easy to come to a conclusion, and then the question arises how far the buyer is justified in asking his veterinary surgeon to tell him whether he had better buy the horse or leave him alone, and how far the veterinary surgeon would be well advised in acceding to the request.

I said just now that the substitution of veterinary certificates for warranties had the result of putting the veterinary surgeon and his client into more or less antagonism in the event of the former making a mistake, or the horse not turning out well. This is, of course, intensified when the veterinary surgeon enlarges his functions to the extent of advising his client to buy or decline any particular horse. Such advice is not quite within the real duties of a veterinary surgeon, who is *functus officio* as soon as he has examined the horse and committed his ideas to paper in the form of a certificate. Nevertheless, any competent advice could not be otherwise than useful to buyers whose experience of horses is not very extensive. The veterinary surgeon, though he may neither be a good horseman nor coachman, will probably be able to make a very good guess whether the defects he has found in the steed which he has examined are likely to develop to an extent which shall impair the animal's usefulness. The veterinary expert can be guided by the age of the horse, whereas a novice would be unable to say whether a certain defect was as important in a horse of mature years as it would be in the case of a four-year-old. Still, it must not be left out of sight that a veterinary surgeon, by doing anything more than giving his certificate, to a certain extent risks his reputation. A horse which might stand sound for years if properly attended to, might become unsound very speedily if subjected to inexperienced management. I remember one case especially which exemplified this. A riding horse was sold with a warranty of soundness—this was many years ago— and soon after the deal the seller was notified that the horse was unsound, the unsoundness consisting of navicular or fever in the feet, I forget which. As the seller declined to take the horse back, the buyer brought an action for breach of warranty, and was represented by counsel who had some knowledge of horses. The defendant and his witnesses stoutly denied the alleged unsoundness, the defendant recounting the long journeys he had made in the saddle, and how the horse had always reached home "as fresh as paint." "You never found it necessary to bandage him, or to take any recuperative measures?" asked the plaintiff's counsel. The defendant denied anything of the kind ; he had never bandaged, and never had wanted to do so ; nor had he taken any other precautionary measures. Ultimately the jury found for the plaintiff, presumably on the ground that by riding his horse far and fast, and taking no care of him afterwards, the seeds of the disease were laid. This sort of thing is probably the key to many cases of unsoundness, and veterinary surgeons, being acquainted with the fact, are very reasonably rather chary of venturing an opinion as to the expediency of buying a horse.—*Live Stock Journal.*

A DRAFT sale of nineteen Clydesdale horses, comprising six brood mares, eight fillies, and five yearlings, from the Blairtummock Stud, owned by Professor James McCall, F.R.C.V.S., Glasgow, realised close upon £1,000, on Tuesday, 21st April ult., the biggest price being 100 guineas paid by an English breeder for the brood mare, "Flower of Moray," foaled in 1887. The average price realised was £52 3s. 4d.

THE MICRO-ORGANIC LIFE OF WATER.

It is now more than two hundred years ago since the Dutch naturalist, Leeuwenhoeck, discovered the presence of bacteria in the saliva of the mouth. He knew, however, practically nothing with regard to their nature, and it was not till the beginning of the present century that any further light was shed upon the subject, and that Ehrenberg made the first scientific observations, by the aid of the microscope, with regard to their nature and presence in a variety of substances. They were at first called *infusoria*, or infusion animals, under the idea that they were the lowest members of the animal kingdom. Subsequent investigators, notably Schwann and Cagniard La-Tour, further studied these minute forms of life, and showed that they were implicated in the process of the fermentation of wine and beer, &c. It was, however, to the great Frenchman, whose death France still mourns—viz., Louis Pasteur, that we owe the most famous investigations into this world of minute life.

We purpose in this article to draw our readers' attention to the micro-organic life of water, more especially drinking water, as revealed by recent research, and to point out its significance and importance from a sanitary point of view. Before we knew aught with regard to the micro-organic life of water, the belief was common that the most dangerous kind of contamination in a drinking water was *organic matter*. It was thought that this organic matter could become spontaneously fermented, as well as induce fermentation in other organic matter by merely coming in contact with it. Pasteur, however, showed the fallacy of this theory, and pointed out the fact that the reason why organic matter was a dangerous impurity in water was simply because it was apt to be associated with micro-organisms of a disease-producing character; and while we still attach considerable significance to the presence of organic matter in water, more especially that of animal origin, we do so merely because it furnishes us with presumptive evidence of the presence of what alone is dangerous—viz., the disease germs. The test for organic matter is more easily applied than the test for germ life, which has hardly as yet been developed to such an extent as to permit of very general application. We have, however, devised fairly satisfactory methods for conducting the bacteriological analysis of a water, and before describing some of the results which this method of examination has furnished, it may be well, in a word or two, to describe how it is we are able, not merely to detect the presence of organisms, many of them so minute as to defy ordinary microscopic examination, but actually to estimate, with considerable accuracy, their number.

It is to Dr. Koch that we chiefly owe the ingenious method known as "plate-culture." Like all other forms of life, bacteria need certain food ingredients for their development; and Koch's method was suggested to him by the observation that a slice of cooked potato, if exposed to the air, and preserved at a suitable temperature in a moist place, developed after some time, a number of different coloured patches. A microscopical examination of these patches revealed the interesting fact that each patch consisted of a large number of bacteria of one kind. If, then, a drop of water—which it is desired to test for bacterial life—be introduced into some solid medium, previously rendered absolutely free from bacterial life, and containing suitable food material, the result will be that a rapid development of the organisms present ensues, and very soon in place of each organism, we have what is technically known as a "colony"—since the rigidity of the surrounding medium prevents movement on the part of the organism. The medium used by Koch is gelatine containing nutritive substances. The *modus operandi* consists in introducing a drop of water into a tube containing sterilised (that

is free from micro-organic life) liquid gelatine. The drop of water is then incorporated with the liquid gelatine by quickly rotating the tube, and the whole is poured on a plate, special precautions being taken to prevent contamination. The gelatine soon becomes solid, and forms a thin coating over the plate. In due time the colonies make their appearance, and may be counted. As each colony may be taken to represent each micro-organism in the original liquid, their number is thus inferred. This, however, only gives us, as we have seen, the total number of organisms, and does not enable us to identify their species. To do so we have to make a series of cultivations, the one from the others. In this way we eventually obtain a "pure" cultivation. The identification of the different organisms has been further facilitated by the use of certain staining reagents, and by using separate culture media, since organisms differ in their tastes in this respect.

If a sample of almost any kind of water be examined by the above method, it will be found to contain bacteria in greater or lesser number. Many may remember the alarm with which the inhabitants of a large city in Scotland learned of the presence in their drinking water of minute forms of animal life. It is possible that their feelings might have been more strongly outraged had they known of the huge numbers of microscopic organisms which they swallow in every drop they drink. Indeed, so numerous are they that it is found most convenient to state their number per cubic centimetre—that is, about the one-sixteenth part of a cubic inch. No natural form of water can be said to be free from bacterial life, and this is only what we should expect when we reflect on the well-nigh universal occurrence of bacteria in the air. It was shown, about 25 years ago, by Professor Burdon Saunderson, that even filtered water obtained from the purest ice, as well as distilled water which had been kept some little time, contained bacteria. The waters which are freest from organisms are such forms of meteoric water as ice, snow, hail, and rain. Investigations on the water obtained by melting snow show a variation of from 2,000 to 3,000 bacteria per cubic centimetre. The sample of snow found to be purest in this respect was obtained from a Norwegian glacier some 6,000 feet above sea-level. The water obtained from ice seems to be less pure. Thus the ice taken from Lake Rummelsburg, near the city of Berlin, showed, when examined on different occasions, a number of bacteria varying from 21 to close on 9,000 per cubic centimetre; while in samples of ice used in Berlin, and obtained from other sources, as many as 25,000 have been found. The only sort of ice which seems to be free from them is that made from distilled water. Ice, however, is probably about 90 per cent. purer than the water from which it is taken. It may be added that some interesting investigations were made on hailstones in Russia, which showed that from 279 to 21,000 were present per cubic centimetre.

With regard to rain water, we have not the same number of statistics. It would seem, however, from the few investigations which have been carried out, that it is wonderfully free from this class of impurity. In Paris, rain collected on the outskirts of the town only contained four bacteria per cubic centimetre; while that collected in the middle of the city contained 19.

When we come, however, to other classes of natural water, we have an enormous increase in their bacterial contents. The most elaborate amount of research in this respect has been made on river waters. Thus such rivers as the Thames and the Lea at London, the Seine at Paris, the Dee, the Rhone, the Maine, the Saone, and the Isar at Munich, have all been submitted to a large number of bacteriological analyses. The results obtained show a wide variation in the number of bacteria present. Thus the result of some two years' investigation on the Thames and the Lea by Professor P. F. Frankland showed a variation of from 1,000 to 92,000 for the former, and of from 1,000 to 121,000 for the latter. The months in which both rivers

were purest were the summer months; while January (for the Thames), and December (for the Lea), were the worst months. Dr. Frankland suggests that an explanation of this is to be found in the fact that during the summer months the waters of these two rivers is chiefly derived from springs; while during the winter months a considerable amount of drainage from cultivated lands finds access into the rivers. London, as all are aware, does not enjoy the best of water supplies. It may be some consolation, however, for the Londoners to know that in this respect they enjoy a purer water than that afforded by the Seine at Paris, in which the numbers range from 6,000 to 153,000. Like the Lea, December is the worst month for the Seine.

When it is stated that as many as 26,000,000 per cubic centimetre have been found in a sample of raw sewage, it may be easily understood how the addition of sewage to a stream should enormously increase their number in its water. This is strikingly brought out in some of the researches of these river waters. Thus the Seine above Paris contained only 300, but below Paris it contained 200,000 per centimetre, that is, an increase of nearly 700-fold. Similarly, the river Isar, above Munich, contained only 531, while below the city it contained 227,369 per cubic centimetre. Lastly, the river Spree showed an increase in its waters of from 1,000 above the city to 2,500,000 per cubic centimetre below the city. In all these cases the increase was due to contamination by sewage matter, which the rivers suffered in their flow through the cities.

Dr. P. F. Frankland, in his recently-issued valuable work, "Micro-Organisms in Water," cites some interesting researches on the river Dee, which illustrate the process of purification taking place in a stream in the course of a few miles flow. Samples of water from over forty miles of the river were examined. That drawn from the river at Braemar was found to contain 88 bacteria; below Old Mar Castle, after the incorporation of the Dee with the river Cluny, the number was increased to 3,000. At Ballater Bridge this number was reduced about one-third, giving evidence of the process of purification which had been going on. Below Ballater it was again tested, when some 3,700 were found; while, lastly, at Kincardine O'Neil, the number was again reduced to 938. In Dr. Frankland's own words—"The river Dee thus affords an example of the repeated pollution and repeated restoration of a river to a state of comparative purity."

The water of lakes seem to be considerably freer than river water from bacterial life; indeed, there seems to be a process of purification going on in lakes, since the water of a lake contains actually fewer bacteria than the streams supplying that lake. The further from shore, the purer is the water likely to be in this respect. It will be of interest to those of our readers who are dwellers in Glasgow to know that the number in Loch Katrine has been found to be 74. In this respect Loch Katrine is purer than the Loch of Lintrathen, which supplies Dundee, which has been found to contain 170. The Lake of Lucerne, in Switzerland, however, is purer than Loch Katrine in this respect, the numbers found there varying from 8 to 51.

Both wells—especially deep wells—and spring waters are comparatively free from bacterial life. Lastly, it may be pointed out that even sea water is not free from bacteria, unless, perhaps, at great distances from land.

A point which the reader will naturally be curious about is the significance, from a health point of view, of these minute denizens of water. Now, even granting that the majority of bacteria found in water may be harmless, nay, more, that they may possibly subserve a useful purpose, the fact nevertheless remains that waters containing a large number of them are likely to contain along with those which are harmless those also of a hurtful kind. That water may be the means of spreading certain diseases, more especially cholera and typhoid fever, abundance of proof is not wanting. It may be safely con-

cluded, therefore, that since our knowledge of disease-producing germs, and our ability to detect them, are as yet limited, the mere presence of large numbers of bacteria in a water lays it open to suspicion. It is hence of interest to see how far such common methods for effecting its purification, as filtration through various substances, remove bacteria.

It has been long known that most substances used for this purpose do little for a water beyond removing matter in suspension. Some kind of filters, however, such as bone charcoal, are capable of doing much to remove organic matter in solution. It is interesting to find, however, that a large number of the filters in common use have a most important effect on the bacteria in water. Sand, for example, which does little more than remove matter in suspension, under favourable conditions effects the purification of water from bacterial life to the extent of from 93 to 99 per cent. Of course this is only when filtration is carried on under the most suitable conditions. There must be a sufficiently thick layer of sand, and the rate of filtration must be sufficiently slow to permit of the sand exercising its full effect as a purifier. There is a condition which is still more important, and one which will no doubt strike the reader as at first sight a somewhat unexpected one. New sand filters do not exert the same influence as those which have been in use for some time, in effecting the removal of bacteria. This is due to the formation of a slimy growth which covers the surface layer of the filter. Until the filter has developed on its surface this slimy growth, it possesses little power to remove micro-organic life from the water filtered through it. Such filters as animal and vegetable charcoal, spongy iron and coke, are also most effective in removing bacteria. Indeed, under favourable conditions, complete removal of them may be effected. It is noteworthy that in this respect vegetable charcoal is quite as efficient as animal charcoal. This is all the more striking since, as we have indicated, vegetable charcoal does not possess the power that animal charcoal has of removing the organic matter dissolved in the water. A substance which has been also shown to be very effective in this respect is biscuit porcelain. The habit of collecting drinking water in large reservoirs, where it is allowed to settle for some time before being drawn off for use, exercises a very beneficial effect, in considerably reducing the number of bacteria, which, under such circumstances, subside.

Filtration, then, will be seen to be a most important precaution; and it seems only right to infer that any disease-producing organisms present in a water would be removed by its means. Indeed, it may be boldly stated that this fact has been proved on more occasions than one. Perhaps the most striking demonstration of its truth was afforded by the cholera epidemic in Hamburg in 1892, where the adjoining town of Altona suffered to a much less extent than Hamburg itself, the death-rate in the former town being only 221 per 100,000, while that in the latter was six times as great. So far as the water supplied to the two towns was concerned, Hamburg was much better off that Altona, since, although both towns drew their drinking supply from the river Elbe, the intake for Hamburg was above the town, whereas the intake for Altona was below it, and after the river had received the sewage of Hamburg. The true reason of the comparative immunity enjoyed by Altona was due to the fact that the precaution of submitting the water to filtration was taken before drinking it. In Hamburg no such precaution was adopted.

In conclusion, lest the above remarks should have the effect of unnecessarily alarming many people, it may be added that wherever any suspicion exists as to the quality of a water, a safe and effective precautionary measure is to submit it to boiling, since the boiling temperature is sufficient to kill such disease-producing germs as it is likely to contain. Certainly such a precaution would not be wasted with most of the drinking waters of Continental towns.

C. M. A.

THE OUTBREAK OF GLANDERS IN LIVERPOOL.

A very serious problem.

THE outbreak of glanders in Liverpool is a very serious matter, and is engaging the unremitting and anxious attention of Mr. Reynolds, the Corporation veterinary surgeon. Three distinct stables have, up to now, been affected, and it has been found necessary to destroy eleven horses. Once the disease has definitely declared itself, there is practically no remedy, the knacker's yard being the sole resource left. It is easy to see, therefore, that if glanders attacked horses on any large scale the prospect would be very alarming, as well as very costly. In the interest of hygiene the Health Committee would be compelled to destroy forthwith all horses which were properly certified to be suffering from glanders. The compensation to the owners from the local authority is considerable, and cannot but be of advantage to the owners of horse flesh. The rate of compensation is one-fourth of the value of the animal prior to the attack. As a glandered horse is worthless, the owner is to that extent the gainer. The disease, however, is so terrible and far-reaching—dangerous alike to men and animals—that no authority which has the health of the community at heart would hesitate at a larger sum if that were required.

Regrettable and inexplicable as it may seem, the law regulating the stamping out of this disease is most inefficient and ridiculously inadequate. For instance, the Corporation might find itself compelled to spend some £5,000 or £10,000 in an acute outbreak of this type, yet the whole effect of these valuable precautionary measures might be rendered absolutely nugatory by the importation or visit of a diseased horse from the outlying district. This results from the conflict of jurisdiction between the counties and the boroughs. If the Corporation moves and stamps out disease with a heavy hand, the County Council may remain apathetic or take a different view of the question, and thus it may come about that a farmer's horse coming into the city may drink at a public trough, and spread the disease as far as ever. The common trough, so much in vogue by humanitarians as a kindness to animals, is often the channel through which contagious disease is spread. It is particularly so with respect to glanders. The only remedy—if it can be called such—for glanders is an injection of "Mallein," which is used, in the first instance, to determine whether an animal is affected by the disease. This has to some extent been experimented with in Liverpool, but so far experts regard its efficacy with some dubiety. It would be perhaps more accurate to describe their position as that of a barrister with a "watching brief." Mallein was discovered and made by a Russian veterinary surgeon named Kalming, the idea being suggested by Koch's application of tuberculin in cases of tuberculosis. The seat of glanders, which is to some extent a misnomer, is in the lungs, and horses in a debilitated condition from any cause are the victims. Strong horses appear to be able to resist the germs by the good state of their constitution alone, but if they happen to come in contact with a "rubbing-post"—*a la* Duke of Argyll—or any object touched by a glandered horse, the effect upon a wound, however slight, is almost certain to be followed by communication of the deadly virus. The human subject is similarly affected, and the results are terrible, and almost always fatal. It is little wonder, then, that the veterinary department of the Corporation is just now exceedingly active, or that the Health Committee looks with something like alarm at the spread of the disease, and is concerned for the comparative powerlessness of the machinery with which it is equipped, or rather at the ease with which all its efforts may be rendered absolutely futile by a chance visit of an animal from beyond its boundaries. The extirpation of the disease should depend upon an Imperial enactment, and some effort in that direction will be shortly made.—*Liverpool Daily Post*, April 11th.

AN ABLE ADMINISTRATOR.

In Memoriam.

THE late Principal Veterinary Surgeon James Collins was born November 14th, 1830. He joined the 6th Inniskilling Dragoons as veterinary surgeon June 23rd, 1854. He was promoted 1st class veterinary surgeon July 29th, 1862; inspecting veterinary surgeon, Bombay Presidency, October, 1866; appointed staff veterinary surgeon, Curragh Camp, November, 1871; and to Dublin in 1873. He remained in Ireland until 1876, where he specially distinguished himself in dealing with outbreaks of glanders, for which he was highly commended by H.R.H. the Commander-in-Chief, and by General Sir John Michael, the Commander of the Forces in Ireland. He was promoted Principal Veterinary Surgeon of the Army, June 28th, 1876, and he retired in his fifty-third year on completion of the prescribed seven years' tenure of office. He served in the Crimea with the Inniskilling Dragoons and other corps from July, 1854, until July, 1856, and was present at the battles of Balaclava, Inkerman, and siege of Sebastopol (medal with three clasps and the Turkish medal). He proceeded to India in September, 1858, and served in that country until 1870, where he did excellent work, and after only twelve years' service was promoted to be Staff Veterinary Surgeon of the Bombay Presidency, thus early making his mark.

Immediately on appointment as Principal Veterinary Surgeon, he applied for the removal of his office from Woolwich, where it was almost lost, to Headquarters, London, which was eventually granted. As Principal Veterinary Surgeon he, in 1878, started the idea of instituting the Aldershot Veterinary School for the instruction of officers and farrier sergeants and shoeing smiths. It was eventually approved of by the authorities and established, and opened on June 1, 1880, the present Director-General of the Department being the first professor. Principal Veterinary Surgeon Collins drew up a very successful scheme for this school, and the lines laid down by him are still in a great measure in force. He attended the opening of the school, and took very great interest in it during the remainder of his term of office, which did not expire until he had seen the institution firmly and successfully established. Long before the Veterinary School was established he had classes formed at Woolwich, for the instruction of farrier sergeants and shoeing smiths of the Royal Artillery, by veterinary officers at Woolwich.

It may here be observed that the Aldershot Army Veterinary School has proved of the greatest benefit to the service. One of the first things Principal Veterinary Surgeon Collins did after his appointment, was to obtain a new Royal Warrant, increasing the pay and pensions of the officers of the Army Veterinary Department, for which they were deeply grateful to him. He then, ever studious of the welfare of others and of the Service, found that several veterinary officers held appointments for an indefinite period at home to the detriment of others, who were therefore obliged to proceed to India after being only a short time at home, a very unjust state of affairs. But as veterinary officers were then permanently gazetted to regiments, they could not be moved; however, Principal Veterinary Surgeon Collins was equal to the occasion, and submitted an admirable scheme, which was approved and adopted, placing them all in one list, thus forming the Army Veterinary Department. This list enabled him to make a foreign service roster, in which all took their fair turn of service both abroad and at home, and besides, this unification removed from veterinary officers the heavy pecuniary charges to which they had been subjected while belonging to corps, besides giving them certain allowances which they did not formerly receive. This unification scheme has proved of the greatest benefit in the working of the department.

In 1878 Principal Veterinary Surgeon Collins was successful in obtaining

the extension of the Good Service rewards to the department, Inspecting Veterinary Surgeon T. P. Gudgin being the first recipient. In 1880 Principal Veterinary Surgeon Collins was successful in obtaining an extra grant per diem to veterinary officers in sole veterinary charge in any colony, and also of extra pay to the chief veterinary officer in the field. In 1880 he also succeeded in obtaining promotions for distinguished services for the department, which had not before been conceded. In 1881 he instituted the annual "Veterinary Statistical Return for the Army," a most valuable publication, which is, of course, still continued. Finding the old veterinary regulations would not meet requirements, especially as regards sanitation, stable management, and the method of dealing with glanders or farcy, and other contagious diseases, he compiled the new edition of 1882, fully dealing with all the above, these regulations being so excellent that they remained in force until 1894, when a new edition appeared, in which they are practically republished. But long before the 1882 edition was published, he had issued orders which firmly established the sanitary regulations which are still so successfully in force in the mounted branches of the Army. In 1882, the Companionship of the Bath was first conferred on an officer of the Army Veterinary Department; now the officers of the Army Veterinary Department are on the same footing as all other military officers for decorations. In 1883, he got an increased step of rank to the then so-called inspecting veterinary surgeons, and to the then so-called veterinary surgeons, 1st class, after ten years' service in that grade.

The last great boon that Principal Veterinary Surgeon Collins conferred on all veterinary officers was in obtaining the right of presentation at Court, which had been before denied them. This was in June, 1883, and he was the first veterinary officer regularly presented. For these services the Good Service reward was at retirement conferred on him by Her Majesty.

From the above it will be seen what great service Principal Veterinary Surgeon Collins rendered to his department. He it was who placed it on its present sound basis, and laid down the admirable sanitary principles on which it is still conducted, and who made the task of his successor comparatively easy. He was a man of firm will with great determination, which made him succeed in most of what he undertook. He was a strict disciplinarian, but always willing to give a helping hand to the deserving. He was straightforward and impartial, and he will ever be kindly remembered by those who had the privilege of serving under him.—*Army and Navy Gazette.*

Parliamentary Intelligence.

TUBERCULOSIS.

Another Commission to be Appointed.

MR. CRAWLEY asked the President of the Local Government Board whether, in view of the fact brought to light by the Royal Commission on Tuberculosis, that so many cows suffering from tuberculosis are giving milk which is supplied to consumers, and that the milk from these cows is dangerous to the health of human beings, he is prepared to institute some system by which all cows whose milk is sold for public consumption shall be placed under compulsory inspection.

MR. CHAPLIN: While the report of the Commission of 1895 has dealt fully with the scientific aspects of the matter referred to, no report has been made on the administrative procedure necessary to give effect to the conclusion of the Commission. The Government have, therefore, assented to the proposal that a Royal Commission be appointed to consider and report further on

these matters. Legislation would be necessary to enable me to order an inspection of all cows whose milk is sold for public consumption, and I think it should be postponed pending the inquiry which has been determined upon. It is, however, to be gathered from the report already issued, that by a very simple process—namely, boiling the milk, absolute immunity from infection can be secured for the consumer.

Dr. FARQUHARSON: Is it not the fact that tuberculosis cannot be spread through milk unless there was a disease in the udder of the cow, and under those circumstances would not inspection be both an easy and effectual preventive? I would also ask whether without such inspection during the possibly long time before the new Commission can report many lives may be lost?

The SPEAKER: I think the hon. member should give notice of that question.

Mr. CHAPLIN: I will answer the question now; indeed it is already answered by what I have said. Legislation would be necessary to give me the power of compulsory inspection. I have no doubt there is a good deal in what the hon. member has said, but I could not do it without further legislation, which would be impossible this session.

Obituary.

MR. JOHN CHAPMAN, who, with his father, was practically the maker of the famous Trent Bridge ground, and who, in the early forties, was one of the mainstays of the Nottingham County Eleven, had died (says the *Globe*) at Gainsborough, where for fifty years he had been in practice as a veterinary surgeon. As a cricketer, Mr. Chapman was contemporary with those giants of the game, Alfred Mynn and Fuller Pilch. In 1844, playing for Notts against the Gentlemen of England, he bowled both Mynn and Pilch first ball, the latter having scored fifty when he was put on to bowl. Mr. Chapman bowled against England for Notts in 1847, and in the many important matches in which he took part he was a very consistent scorer. It was only the other day, at the County Club dinner, that Dean Hole made a reference to Mr. Chapman's skill at the game. The deceased was 82 years of age.

MR. J. D. BARFORD, J.P., died at his residence at Portswood, Southampton, last week. He was well known as a veterinary surgeon of large experience, having been partner with the late Mr. W. C. Spooner, and his successor in the business. During the frequent visits of the Royal Counties Agricultural Society to Southampton, and of the single visit, in 1868, of the Bath and West of England Society, he was an active member of the local committee, and also occasionally acted in the capacity of Joint Secretary. He was an inspector under the Privy Council at Southampton under the Foreign Animals Act. As a member of the Botley and South Hants Farmers' Club he was a constant attendant at the club meetings, and, as the printed reports of the proceedings show, was a frequent and valued contributor to the debates. He was in his 68th year.

G. H. Pemberton, Stainton, Gloucestershire	..	..	Apl.. 1864
R. Margrave, Swansea, Glamorganshire ..	..	..	May, 1894
Alex. Marking, Sudbury, Suffolk	..	..	Apl., 1869
Geo. Harris, Sawbridge, Herts	..	..	Apl., 1847
J. Chapman, Gainsboro', Lincolnshire ..	..	..	Nov., 1833
J. D. Barford, Southampton	Feb., 1886,		May, 1849

Legal News.

THE FATE OF SOME OLD HORSES.

At Thames Police Court, on Saturday, April 11th, William Almond, 22, was charged with cruelty to a horse. Inspector William Rogers, of the Royal Society for the Prevention of Cruelty to Animals, stated that about nine o'clock on Friday night, while on duty in Naval Row, Poplar, he saw the defendant leading two horses towards the docks. One of the animals, a black gelding, was very lame on the off fore-leg, owing to a diseased limb. There was a poultice on the foot, and the animal had been badly shod with a bar shoe. It was an aged horse. He asked the defendant how far he had come, and Almond replied, "A man asked me to lead it from Barbican to the docks to be shipped for Rotterdam." It being, in witness's opinion, an act of cruelty to lead the animal when in such a condition, he gave the defendant into custody. Inspector Clarke, of the Royal Society, first drew his attention to the case, but he had been so seriously assaulted by a number of men that he was unable to be present. Mr. F. W. Kendall, veterinary surgeon, corroborated the inspector's evidence. Mr. Mead: Where were the horses going? Mr. Kendall: To Rotterdam. Mr. Mead: For what purpose? Mr. Kendall: To be slaughtered for human food, I believe. The commercial value of the horse in question over there would be £7 or £8, but here it would only be worth about 35s. The defendant called Alexander M'Donald, a general dealer of Stephenson Street, Canning Town, who, in reply to the magistrate, said he bought three horses. One was too lame to walk, but he thought the other two were capable of walking as far as the pier. He engaged the defendant to lead the horses, and paid him 1s. 6d. for each horse. He was going to send them to Rotterdam. The inspector, recalled, said he had been engaged in similar prosecutions, and by direction of the Society was engaged on special duty with regard to these cases. Mr. Mead fined the defendant 10s. or seven days. Inspector Rogers then applied for a summons against M'Donald, which was granted and made returnable at once. The case having been proved, Mr. Kendall, in reply to Mr. Mead, said the horses were very roughly packed on board, and it was cheaper to send them living than dead. Mr. Mead said if these cases of gross cruelty continued the magistrates at that court would have to consider whether persons charged should not be sent to prison without the option of a fine, but as that course had not hitherto been adopted, he would not initiate the treatment. The defendant would be fined £4 and £1 4s. 6d. costs, or one month's hard labour.—*Times.*

Extracts from Foreign Journals.

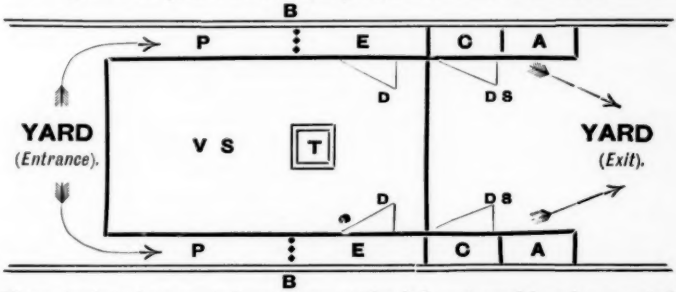
THE SPAYING OF COWS IN ARGENTINA.

In the November number of the Veterinary Journal, we gave our readers a translation of an interesting article on this subject, taken from the *Revista Veterinaria* of Buenos Aires. We wrote to the editor of that paper asking him for further details, and he has very courteously supplied us with the following. He informs us that the operation is carried on in Argentina on a very large scale, no fewer than 25,000 animals being destined thereto this summer in the provinces of Santa Fé and Córdoba. Señor Even says:—"Spaying is an operation which has been practised in Argentina for a good many years back. At first it was thought by many veterinarians that it would not succeed on account of the difficulties to be encountered in the treatment of wild and fierce cattle like ours, but the experience gradually acquired, the discovery that animals reared in the open-air and subjected to all kinds of

climatic conditions showed extraordinary hardihood under the operation, the fact that there is an almost complete absence of infectious germs in our air and in the soil of those immense plains on which our herds pasture, all these tended to prove that the spaying of cows is of great utility, easy in execution, and, I may say, enormously profitable. It is interesting to note that the first attempts at this operation were made by an English veterinary surgeon, who resided some years in this country. He used to perform through the flank, following the same method as in the spaying of sows, but many of his patients died, others took a long time to recover. He could operate on only a very few animals each day, and he required a large number of assistants. In short, by following this plan, instead of the profitable results so greatly desired serious losses were caused to stock-owners, and the operation was abandoned for the time. My distinguished colleague, Enrique Rucq, of Santa Fé, thought, however, that the operation might be successfully and profitably performed, and he proceeded to experiment by removing the ovaries through the vagina, employing a plan somewhat similar to Colin's, but modified and adapted to the special conditions of the place. Señor Rucq has promised to send an account of his manner of proceeding for publication in this Review, but he is unwell at present and unable to fulfil his promise.

"Spaying is performed in summer after calving, and the most suitable months are December, January, February and March. The cows intended for fattening are set apart, or rather the bulls are withdrawn from the cattle-sheds, some time before calving begins. Señor Rucq has, however, demonstrated that there is no danger in spaying a pregnant cow, and such animals, after undergoing the operation, give birth to their calves with perfect regularity and without danger. As a result of this, the segregation of cows for fattening becomes a much easier matter, as it does not signify whether the animal is in calf or not.

"Subjoined is a plan of the *corral*, or yard, most suitable for the operation:—



The animals to be operated on enter at the left, and are driven by mounted *peons*, or herdsmen, in single file along the narrow passages P, formed by a stockade. At B is a barrier, which is closed as soon as one cow has passed it; the cow then passes into the space C, where she is fixed by two bars which are passed across her shoulders and her haunches, two others which support her abdomen and her breast, and a fifth which is passed through behind her, just above the hocks. Her head is also fastened to a bar in front of her, by means of a rope fitted for the purpose and running along the bar. When she is fixed in this position the operation can be performed quite easily and safely. The surgeon who, with his assistant, has been waiting in the space VS, takes his instruments from the table T, opens the door D and steps into the empty space E behind the cow. Another assistant stands in the enclosed space A,

to fasten and unfasten the cow. When the operation is over, he opens the door DS and lets the cow escape. The *corral* with double passages saves time, as one cow is being tied up while the other is being operated on, and *vice versâ*.

"The operation is thus performed: (*a*) The surgeon, as I have said, opens his door D and enters the empty space E behind the cow which is secured, as explained, in C; he brings with him his instruments, which are left between each operation in a solution of lysol or creolin on the table T; (*b*) He introduces into the vagina of the cow a Charlier vaginal dilator; (*c*) He next introduces his hand, armed with a Colin bistouri, having the blade concealed and the runner much smaller than that of the instrument commonly sold and used. The incision is made in the upper and posterior part of the vagina above the cervix, and it extends two to three centimetres (say $\frac{3}{4}$ to 1 inch) from the back forwards; (*d*) When once the incision has been made, the hand holding the bistouri is withdrawn, and so is likewise the vaginal dilator. Then the hand alone—right or left, as may be most convenient to the operator—is once more introduced into the vagina, with the fingers close together, and, enlarging by dilaceration the opening already made by the incision, enters the abdominal cavity below the rectum, and by a movement to the left and to the right, catches hold, one after the other, of the ovaries; these the hand finds quite easily after a little practice; (*e*) When once the ovary has been grasped, one hand, which has remained free outside, introduces the *écraseur* along the other hand and arm, sliding it down the arm till it reaches the fingers. The chain of the *écraseur* is at once fixed on the ovary by the fingers, which have sought it out and grasped it; the hand which remains outside at once brings the chain into play, and the cutting of the ovary is rapidly performed. The excised ovary falls into the hand of the operator, who, by a rapid movement, lets it fall into the vagina; the other ovary is treated in the same fashion. On withdrawing the hand containing the second ovary, the first is picked up in the vagina, and the two are brought outside together. The operation is now finished, and has occupied only some three to four minutes. With a little practice a surgeon can spay 100 to 150 cows per day."

TOXICÆMIA (BLOOD-POISONING) IN ANIMALS CAUSED BY OVER-DRIVING.

Whilst a herd of some 150 head of cattle, that had just arrived from Buenos Aires, after a fatiguing and exhausting voyage, were being driven through Paris, a considerable number of them ran off, frightened by the shouts and yells of the drivers. Five of the animals ran on till their strength was worn out and they fell dead. Two hours after death an experiment was made by taking blood from the necks of these animals, which were cut. A quantity of this blood—which was dark and thick, but regained, when exposed to the air, its redness, and coagulated very rapidly—was filled into sterilised *éprouvettes*. On the opening of the carcases the surgeons were struck by the extraordinary stiffness of the limbs. The liver was quite filled with blood, and the other organs were normal; the muscles showed a reddish-brown colouring, especially in the upper part of the thigh; a cross-cut through the muscles assumed after a short time, a salmon colour. In the blood, which was examined without delay, no pathogenic micro-organisms were found. It was subsequently concluded that the cattle had died of toxicæmia, or blood-poisoning, caused by want of food and over-driving. This assumption was verified by the toxic effect of the blood. Two oldish and one young rabbit died within a few hours after an intravenous injection of one cubic centimètre of serum taken from the blood of the dead cattle. Rabbits of the same size, subjected to the same treatment with blood-serum from healthy cattle, remained unaffected. In view of these facts, one is justified in believing that the use of the flesh of over-driven animals is likely to be attended with serious consequences.—(*Oesterr. Monatsschrift.*)

Notes and News.

ANOTHER STEP IN THE NEW PHOTOGRAPHY.—We have this week received information of a development in the new photographic process which promises to be of great importance in regard to its application to medicine. The improvement consists essentially in very materially reducing the exposure, so that in the case of hands and feet, &c., a few seconds suffice to give satisfactory detail. We have seen some good negatives so obtained with an exposure of less than twenty seconds. The results are obtained by placing the negative (film side) upon powdered fluorspar. It is evident in this case that the active rays are transmitted through the glass. The process gives promise of enabling us to obtain photographic images of objects within the human body with a comparatively short exposure, say five to ten minutes. —*The Lancet.*

THE imports of horses continue to increase, and during the quarter ended March 31st they numbered 9,210, against 4,353 last year. Of the number imported this year, 6,320 came from the United States, against 2,904 last year; 791 from Canada, against 2; and 2,099 from other countries, against 1,447. The value of the horses imported this year was £240,540, against £131,939, the average value being a little over £26, showing that horses of an improved class are being imported. But when we turn to the exports we find some figures which must excite comment and action. There were 6,334 horses exported, against 3,755, and of these 1,624 went to Holland, 3,440 to Belgium, 673 to France, and 597 to other countries. The value of the exported horses was £113,899, against £74,414 last year, the average being only about £18. Examining the figures more closely, it appears that the average price of the horses exported to France was £53 per head, and of those exported to "other countries" the average price was £44 per head. These are perfectly satis factory figures, and show that so far, at least, the right kind of export trade has not wholly disappeared. But the value of the horses sent to Holland was only £9, and to Belgium £10. Now, what description of animals can be bought for exportation at £10, and what purpose are they intended to serve? In some cases they would appear to be meant for the knackers. There have recently been police-court proceedings, and revolting statements have also been published as to horses being sent to feed leeches, which seem to throw some light on the subject. The statistics afford materials on which the R.S.P.C.A. should be able to set to work with some good results. This is a kind of export trade that ought to be closely scrutinised and suppressed.

Correspondence.

To the Editor of THE VETERINARY JOURNAL.

DEAR SIR,—The report in your issue of last month, of the proceedings of the meeting held by the Border Counties Veterinary Medical Society, at Penrith, on the 13th March ult., furnished some information on a subject that at first glance seemed more within the province of a farrier's work, than that of the veterinary surgeon, but on a more careful consideration of the remarks, and opinions advanced by Mr. H. Thompson, Aspatria, the importance of the subject he had introduced for discussion became at once apparent, the more so, that an important legal decision, as we are led to infer from his statements (as reported) has hinged on the question referred to, viz., should the nails in a horse's shoe be driven in a vertical, or in an oblique, or slanting, direction. It would appear that an unfortunate shoeing smith, dragged into law, whose case induced Mr. Thompson to ventilate this point at the Society meeting, was mulcted in heavy damages for applying a shoe, the nails of which inclined inwards, although no injury to the foot or lameness could be

detected when the pony was examined by Mr. Thompson, on the day previous to the trial; he finding, however, "bony enlargements, and partial low ringbone on the inside of both pastern joints."

In my opinion, there was a gross miscarriage of justice, if the judgment was founded on a shoe in which the nails pointed in an oblique direction, that was produced in court for the opinion of the expert witnesses on both sides.

I consider that Mr. Thompson has done a service to the veterinary profession, by bringing this question as to the angle of the shoe nails in the horny box of the foot, to its notice.

When a writer on horse shoeing states that the nails which fix the shoe to a horse's foot are to be driven vertically, he betrays an amazing want of practical knowledge. Another writes of driving nails obliquely outwards. One other authority propounds, that the nails should be nearly vertical, inclining slightly inwatds. Amid this extraordinary jumble of ideas, it is not surprising that the legal mind of the most astute judge should become confused and misled, when consulting the writing of these authorities, and that the innocent should suffer in consequence. My friend Mr. Thompson, has "hit the right nail on the head," although I do not agree with him that for one vertically driven nail, there are 99 driven obliquely. Let us study the conformation of the perfectly-formed fore foot, prepared for the application of the shoe, and also the hind foot, alike perfect and prepared. The angle from the coronet to the toe of the foot will be found to be about 45 degrees, and the corresponding angle of the hind foot about 50 degrees, which angles gradually become less acute, from toe to quarter and heel. The foot being taken up, the shoe applied, and a nail driven vertically through the nail hole near the toe, punched, as all the nails should be, about a quarter of an inch from the outer rim of the shoe, where would it emerge? Not about an inch or so upwards from the edge of the horny wall, but immediately above the shoe, giving no secure grip. The skilful farrier, however, punches the nail holes of the toe so as to give the nails an inward bias, say an angle of 60 degrees in a fore foot, and they are thus driven inwards, and upwards, in a line with the horny angle, emerging partly by means of the bevel on the nail point, which faces towards the sensitive foot, at the position on the crust of the foot, giving the hold necessary for the retention of the shoe, when it is subjected to the strains and concussion of any kind of work a horse may perform. Now, this principle of driving nails inwards and in line with the angle of the crust, must of necessity be applied to a lesser extent as the heels are approached, and in many feet, more especially on the inner aspect of the hind feet, the nails must be driven quite vertically, and the nail holes punched accordingly.

The diversity of form in the feet of horses so frequently met with, resulting from disease or bad shoeing, renders it impossible to lay down a hard and fast rule how they should be shod, but with the shape and weight of shoe that is in common use in this country, it is beyond the shadow of a doubt that horses possessing sound and naturally formed feet must have their iron protections secured on them on the principles above detailed.

Edinburgh. PETER MOIR, M.R.C.V.S.

Communications, Books, Journals, etc., Received.

Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); Bulletin de la Société Centrale de Médecine Vétérinaire (1er trimestre 1896: Paris); Le Bulletin Vétérinaire (Orleans); L'Echo Vétérinaire (Liége); Annales de Médecine Vétérinaire (Brussels); Berliner Thierärztliche Wochenschrift (Berlin): La Clinica Veterinaria (Milan); Il Nuovo Ercolani (Pisa); La Revista Veterinaria (Buenos Aires); La Presse Médicale Belge (Brussels); Revue Médicale de l'Est (Nancy and Paris), etc., etc.